

OCT 6 1921

PROCEEDINGS
OF THE
AMERICAN SOCIETY
OF
CIVIL ENGINEERS

VOL. XLVII—No. 7



September, 1921

Published by the American Society of Civil Engineers at its Headquarters,
33 West Thirty-ninth Street, New York, the Fourth Wednesday
of each Month, except June and July.

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Entered as Second-Class Matter, December 14th, 1896, at the Post Office
at New York, N. Y., under the Act of March 3d, 1879.
Acceptance for mailing at special rate of postage provided for in Section 1103,
Act of October 3d, 1917, authorized on July 5th, 1918.
Subscription, \$8 per annum.

AMERICAN SOCIETY OF CIVIL ENGINEERS

INSTITUTED 1852

PROCEEDINGS

This Society is not responsible for any statement made or opinion expressed in its publications.

SOCIETY AFFAIRS

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MINUTES OF MEETINGS

OF THE SOCIETY

September 7th, 1921.—The meeting was called to order at 7.45 p. m.; President George S. Webster in the chair; Elbert M. Chandler, Acting Secretary; and present, also, 185 members and guests.

The minutes of the meeting of June 1st, 1921, were approved as printed in *Proceedings* for August, 1921.

The evening was devoted to an informal discussion of the subject "National Port Problems". Frederick W. Cowie, M. Am. Soc. C. E., addressed the meeting on "National Phases of Port Problems" and was followed by Maj.-Gen. Lansing H. Beach, U. S. A., M. Am. Soc. C. E., who spoke on "Terminals". Frederic H. Fay, M. Am. Soc. C. E., then discussed the "Development of the Smaller Ports", and M. A. Long, M. Am. Soc. C. E., explained the "Relation of

Warehouses to Port Development". Mr. Long was followed by J. Roland Bibbins, Manager, Department of Transportation and Communication, U. S. Chamber of Commerce, who addressed the meeting on "Function of Port Terminals as Clearing Agencies". The addresses were followed by supplementary remarks on his subject by Maj.-Gen. Beach and an oral discussion of the general subject by Nelson P. Lewis, M. Am. Soc. C. E.

The Acting Secretary announced the following deaths:

JOHN FINDLEY WALLACE, (*Past-President*), of New York City, elected Member, June 2d, 1886; died July 3d, 1921.

WILLIAM BROWN COGSWELL, of Syracuse, N. Y., elected Associate, February 15th, 1871; Member, October 16th, 1872; died June 7th, 1921.

RICHARD HENWOOD GILLESPIE, of Allentown, Pa., elected Associate Member, October 3d, 1900; Member, June 5th, 1906; died July 15th, 1921.

ARON LANCASTER HUNT, of Jacksonville, Fla., elected Member, November 26th, 1918; died July 4th, 1921.

WILLARD ATHERTON NICHOLS, of Redlands, Cal., elected Member, May 7th, 1873; died August 23d, 1921.

WARREN CHAMBERLAIN TUDBURY, of Mare Island, Cal., elected Associate Member, June 1st, 1909; Member, March 12th, 1918; died May 18th, 1921.

JOHN WILSON, of Los Angeles, Cal., elected Member, March 2d, 1915; died June 28th, 1921.

JOSEPH MILLER BURKETT, of Boise, Idaho, elected Associate Member, May 28th, 1912; died April 14th, 1921.

THOMAS GEORGE ELBURY, of San Francisco, Cal., elected Associate Member, May 6th, 1908; died July 6th, 1921.

JOHN EDWARD GRADY, of East Cleveland, Ohio, elected Associate Member, December 6th, 1905; died May 19th, 1921.

EDGAR MILLER GRAHAM, of Muskogee, Okla., elected Associate Member, October 5th, 1909; died May 14th, 1921.

ARTHUR JOHN HART, of Sydney, New South Wales, Australia, elected Associate Member, October 14th, 1919; died June 26th, 1920.

CHARLES RAYMOND LARKIN, of Philadelphia, Pa., elected Junior, January 14th, 1918; Associate Member, June 1st, 1920; died August 30th, 1921.

HARRY MILTON LYNDE, of Raleigh, N. C., elected Junior, April 4th, 1911; Associate Member, April 1st, 1914; died May 17th, 1921.

Adjourned at 9.55 P. M., to meet at 2 P. M., on September 8th, 1921.

September 8th, 1921.—The meeting was called to order at 2 P. M.; Director John P. Hogan in the chair; Elbert M. Chandler, Acting Secretary; and present, also, 82 members and guests.

The Chairman announced that an afternoon session had been called, at the request of the Publication Committee, for the purpose of ascertaining the probable attendance and the extent of interest shown, in order to assist the Committee in its plans for future meetings for the discussion of National subjects. He also announced that opportunity would be afforded for general discussion and questions on the subject at the end of each session.

The subject for the meeting was a continuation of the informal discussion on "National Port Problems". The first speaker was John Meigs, M. Am. Soc. C. E., who spoke on "Lack of Co-Ordination in Design of American Ports". W. Watters Pagon, M. Am. Soc. C. E., gave a "Brief Comparison of American and Foreign Sea Ports", and Edwin J. Clapp, Esq., discussed "Some Observations on Port Finances". Mr. Clapp was followed by Carroll R. Thompson, M. Am. Soc. C. E., who addressed the meeting on "Improvement and Development of Ports."

The Acting Secretary announced that he had received written communications on the subject from Messrs. William H. Adams, M. G. Barnes, Harwood Frost, Frank W. Hodgdon, T. F. Keller, John H. McCallum, and Arthur M. Shaw, and the general subject was discussed orally by Messrs. T. Kennard Thomson, John A. Bense, H. W. Boetzkes, and T. Howard Barnes.

Adjourned at 3.50 P. M., to meet at 7.45 P. M.

September 8th, 1921.—The meeting was called to order at 7.45 P. M.; Director John P. Hogan in the chair; Elbert M. Chandler, Acting Secretary; and present, also, 162 members and guests.

The opening address at this meeting, in continuation of the informal discussion on "National Port Problems", was made by John A. Bense, Past-President, Am. Soc. C. E., who spoke on "Port Problems in New York". Mr. Bense was followed by W. J. Wilgus, M. Am. Soc. C. E., on "Relationship of Rail and Water Carriers"; B. F. Cresson, Jr., M. Am. Soc. C. E., on "Port Administration"; and Mr. H. McL. Harding, on "Pier Designs as Developed from Quay Designs". Mr. Harding illustrated his remarks with lantern slides.

W. J. Wilgus, M. Am. Soc. C. E., presented the following resolution, which, on motion, duly seconded, was carried:

"Resolved, That it is the sense of this meeting that the proper future planning of our seaports is of National concern from the standpoints both of commerce and military protection; and that the Board of Direction be requested to urge upon the Secretary of War, if possible in co-operation with the other National Engineering Societies, the need for prompt and effective action to that end, under the provisions of Section 500 of the Transportation Act of 1920."

Adjourned.

**COMMITTEE APPOINTED BY THE BOARD OF DIRECTION TO REPORT
ON LICENSING OF PROFESSIONAL ENGINEERS**

The Third Conference under the auspices of the Committee on Licensing Engineers was held in the Board Room of the Society, on August 22d, 1921, at 7.30 P. M.

There was an interesting discussion of the general subject of laws for the licensing of professional engineers and land surveyors, other than the licensing of firms, co-partnerships, corporations, and joint stock associations, and as to what should be the attitude of the Engineering Profession in the matter.

The following were in attendance at the Conference:

MEMBERS OF THE COMMITTEE

Richard L. Humphrey, Chairman, Philadelphia, Pa.; Willard Beahan, Cleveland, Ohio; and A. M. Hunt, New York City.

OFFICERS OF THE SOCIETY

Otis E. Hovey, Treasurer, New York City, and Elbert M. Chandler, Acting Secretary, New York City.

OTHERS PRESENT

J. D. Anderson, Dwight P. Robinson and Company, Incorporated, New York City; C. E. Beam, Assoc. M. Am. Soc. C. E., Assistant to the Acting Secretary, American Society of Civil Engineers, New York City; J. A. Bensel, Past-President, Am. Soc. C. E., Consulting Engineer, New York City; Augustus S. Downing, Assistant Commissioner and Director of Professional Education, Albany, N. Y.; Walter G. Eliot, Member, New York State Board of Licensing for Professional Engineers and Land Surveyors, New York City; Alfred D. Flinn, M. Am. Soc. C. E., Secretary, United Engineering Society, New York City; Henry Goldmark, M. Am. Soc. C. E., Consulting Engineer, New York City; John M. Goodell, Assoc. Am. Soc. C. E., Upper Montclair, N. J.; Edwin Ludlow, President, American Institute of Mining and Metallurgical Engineers, Consulting Engineer, New York City; F. A. Molitor, M. Am. Soc. C. E., Consulting Engineer, New York City; H. G. Moulton, M. Am. Soc. C. E., Consulting Engineer, New York City; Henry G. Reist, Secretary, New York State Board of Licensing for Professional Engineers and Land Surveyors, General Electric Company, Schenectady, N. Y.; A. M. Smoot, Ledoux and Company, New York City; F. F. Sharpless, Secretary, American Institute of Mining and Metallurgical Engineers, New York City; Arthur S. Tuttle, M. Am. Soc. C. E., Chief Engineer, Board of Estimate and Apportionment, New York City; E. M. Van Norden, M. Am. Soc. C. E., Civil Engineer, New York Edison Company, New York City.

Additional Conferences

The Fourth and Fifth Conferences will be held in the Board Room of the Society at 7.30 P. M., on September 12th, and October 11th, 1921, respectively. The Committee welcomes the views of all persons interested, either at the Conferences or by written communication.

PROPOSED REVISION OF THE CONSTITUTION

At the Annual Convention held in Portland, Ore., on August 10th, 1920, the Board of Direction was authorized to appoint a committee of eight to consider proposed amendments to the Constitution which were referred to it by the Convention; and to suggest such other amendments as it might deem advisable.

This Committee reported to the Annual Meeting on January 19th, 1921, recommending that all amendments referred to it be not adopted, as in the opinion of the Committee the best interests of the Society required an all-inclusive study and revision of the Constitution.

The Annual Meeting continued the Committee in order that it might present a new Constitution and By-Laws for consideration at the Annual Convention.

In accordance with the instructions of the Annual Meeting, the Committee prepared a draft of a new Constitution and By-Laws which was forwarded to the entire Corporate Membership on March 19th, 1921, and this proposed Constitution and By-Laws, which are presented herewith, was considered, amended, and approved by the Annual Convention held in Houston, Tex., on April 27th, 1921.

In accordance with Section 3 of Article IX of the present Constitution, copies of this proposed Constitution and By-Laws were mailed to the Corporate Membership on August 3d, 1921. The ballot thereon is to be canvassed at the meeting of the Society on October 5th, 1921.

The question of the legality of the proposed Constitution and By-Laws was submitted to Counsel for the Society, Messrs. Parker and Aaron, and their reply under date of June 1st, 1921, is also presented herewith.

CONSTITUTION

ARTICLE I.—NAME, LOCATION AND OBJECT.

1.—The name of this association shall be the AMERICAN SOCIETY OF CIVIL ENGINEERS.

2.—The offices of the Society shall be located in the City of New York.

3.—The objects of the Society shall be the advancement of the sciences of engineering and architecture in their several branches, the professional improvement of its members, the encouragement of intercourse between men of practical science, and the establishment of a central point of reference and union for its members.

ARTICLE II.—MEMBERSHIP.

1.—The Corporate Members of this Society shall be designated as Members and Associate Members. There may also be connected with the Society, Honorary Members, Affiliates, Juniors, and Fellows, who shall be entitled to all the privileges of the Society, except the right to vote and to hold office therein; provided that Honorary Members elected from the Corporate Members of the Society shall retain their right to vote and to hold office.

2.—A Member shall be a Civil, Military, Naval, Mining, Mechanical, Electrical, or other professional Engineer, an Architect or a Marine Architect. He shall be at the time of admission to membership not less than thirty years of age and shall have been in the active practice of his profession for ten years; he shall have had responsible charge of work for at least five years, and shall be qualified to design as well as to direct engineering works. Graduation from a school of engineering of recognized reputation shall be considered as equivalent to two years' active practice. Responsible charge in engineering teaching may be construed as responsible charge of work as required by the Constitution.

3.—An Associate Member shall be a professional Engineer or Architect not less than twenty-five years of age, who shall have been in the active practice of his profession for at least six years, and who shall have had responsible charge of work as principal or assistant for at least one year. Graduation from a school of engineering of recognized reputation shall be considered as equivalent to two years' active practice.

4.—Any person having the necessary qualifications prescribed in this article to entitle him to admission to the grades of Member or Associate Member, shall be eligible for such membership, though he may not be practicing his profession at the time of making his application.

5.—An Affiliate shall be a person who, by scientific acquirements or practical experience, has attained a position in his special pursuit qualifying him to co-operate with engineers in the advancement of professional knowledge and practice, but who is not a professional engineer.

6.—A Junior shall not be less than eighteen years of age, and his connection with the Society shall cease when he becomes thirty-two years of age, unless he be previously transferred to another grade. He shall have had active practice in some branch of engineering for at least two years, or he shall have graduated from a school of engineering of recognized standing. Persons who were in the Junior class prior to March 4th, 1891, shall not have their status changed by the provisions of this section.

7.—Honorary Members shall be chosen only from persons of acknowledged eminence in some branch of engineering or the sciences related thereto. There shall not be more than twenty at any one time.

8.—Fellows shall be contributors to the permanent funds of the Society, though they may not be eligible for admission as Corporate Members.

9.—Student Chapters with a limited use of privileges or facilities of the Society may be authorized by the Board of Direction as provided in By-Laws or other regulation for their recognition and affiliation; but the members of such Chapters shall not therefore be deemed for any purpose to be members of the Society, and no permanent or irrevocable privilege shall thus be conferred.

ARTICLE III.—ADMISSIONS AND EXPULSIONS.

1.—All members other than Honorary Members shall be admitted to the Society only by vote of the Board of Direction, as specified in the By-Laws, but the vote of at least 80% of the entire Board of Direction must be cast to constitute an election, and three negative ballots shall exclude.

Honorary Members shall be proposed by at least ten members of the Society and shall be elected only by a favorable vote by at least all but two members of the Board of Direction, not counting the candidate. No Member of the Board of Direction shall vote upon his own admission.

A person elected an Honorary Member shall be promptly notified thereof by letter. The election shall be canceled if an acceptance is not received within six months after the receipt of such notice.

2.—Upon the written request of ten or more Corporate Members, that for cause therein set forth a person belonging to the Society be expelled, the Board of Direction shall consider the matter, and if there appears to be sufficient reason, shall advise the accused of the charges against him. He may, if he so desires, present a written defence which shall be considered at a meeting of the Board of Direction, of which he shall receive due notice. Not less than two months after such meeting, the Board of Direction shall finally consider the case, and if resignation has not been tendered, or a defence made which is satisfactory to the Board, it shall then notify the person that he will be expelled in one month, unless he elects to appeal from this decision. Appeals will be submitted to the Corporate Members by letter-ballot in a form to be prescribed by the Board of Direction. The ballot shall be accompanied by a statement of the charges, and of the action of the Board thereon, with such information as it deems proper, and also the statement of the person making the appeal. The ballot shall be canvassed by the Board not less than twenty days after its issue. A majority of the ballots cast will be required to sustain the action of the Board. The Board will notify the person and the Corporate Members of the result of the ballot. In case no appeal be made, the Board of Direction will expel the person, and notify him and the Corporate Members of its action.

3.—A member of any grade in the Society may resign his membership by a written communication to the Secretary, who shall present the same to the Board of Direction; when, if all his dues have been paid, his resignation shall be accepted.

ARTICLE IV.—DUES.

1.—The entrance fees payable on admission to the Society shall be as follows: by Members, thirty dollars; Associate Members, twenty-five dollars; Affiliates, twenty dollars; Juniors, ten dollars.

2.—The annual dues payable by Members, except those in District No. 1, shall be as follows: by Corporate Members, twenty dollars; Affiliates, fifteen dollars; Juniors, ten dollars.

3.—In District No. 1 as hereinafter constituted the annual dues, except for members residing outside of North America, shall be as follows: Corporate Members, twenty-five dollars; Affiliates, twenty dollars; Juniors, fifteen dollars.

4.—The Board of Direction shall by By-Law regulate the payment of fees and dues and the discipline for non-payment of dues, including expulsion after notice; it may in proper cases grant extensions or excuse members from payment.

5.—All future annual dues may be compounded by a single payment by a Corporate Member of \$325; or by an Affiliate of \$225. Should a compounding

Affiliate be elected to Corporate Membership he shall pay the further sum of \$100.

Provided, that all compounding Corporate Members or Affiliates who may be or hereafter become Residents of District No. 1, shall be and remain liable for the annual payment of the difference between the annual dues of Residents in said District and Corporate Members, or Affiliates not therein resident; but any Corporate Member may at any time compound for the future payment of all annual dues of every nature and kind by the payment of \$75 in addition to the \$325 hereinbefore named; and any Affiliate may at any time compound for the future payment of all annual dues as Affiliate by the payment of \$40 in addition to the \$225 hereinbefore named.

Provided, that any person desiring to compound for future dues shall have paid his entrance fee, all arrears of dues, and the annual dues for the current year, before the compounding sum may be available.

Persons compounding shall sign an agreement that they will be governed by the Constitution and Laws of the Society as they are now formed, or as they may be hereafter altered, amended or enlarged; and that in case of their ceasing to be connected with the Society from any cause whatever, the amount theretofore paid by them for compounding, and for entrance fees and annual dues, shall be the property of the Society.

All moneys thus paid in commutation of annual dues shall be invested as a permanent fund, only the interest thereupon being subject to appropriation for current expenses.

6.—Persons elected as Fellows shall become such upon the payment of \$250 into the permanent funds of the Society. They shall not be liable for other fees and dues.

7.—Corporate Members and Affiliates who have reached the age of seventy years, and who have paid dues as such for twenty-five years, shall be exempt from further dues. Corporate Members and Affiliates who have paid dues as such for thirty-five years shall be exempt from further dues.

ARTICLE V.—OFFICERS.

1.—The Officers of the Society shall be a President, four Vice-Presidents, eighteen Directors, a Secretary and a Treasurer.

2.—The President, the Vice-Presidents, and the Directors, with the two latest living Past-Presidents continuing to be members, shall constitute the Board of Direction in which the Government of the Society shall be vested, and shall be the Trustees provided for by the laws under which the Society is organized. The Secretary and the Treasurer shall be appointed by the Board of Direction, either from the Board or from other Corporate Members.

3.—The terms of office of the President shall be one year; of the Vice-Presidents, two years; and of the Directors, three years, which terms shall begin at the close of the Annual Meeting at which the officer is elected and continue until a successor qualifies. All other officers or employees shall hold office or position during the pleasure of the Board of Direction.

4.—A vacancy in the office of President shall be filled by the senior Vice-President.

A vacancy in the office of Vice-President shall be filled by the senior Director from the same zone. Seniority between persons holding similar offices shall be determined by priority of election to the office, and when these dates are the same, by priority of admission to Corporate Membership; and when the latter dates are identical, the selection shall be made by lot. In case of the disability, or neglect in the performance of his duty, of any officer of this Society, the Board of Direction shall have power to declare the office vacant. Vacancies in any office for the unexpired term shall be filled by the Board of Direction, except as heretofore provided.

5.—The President shall be ineligible for re-election. The Vice-Presidents and Directors shall not be eligible for re-election to the same office until at least one full term shall have elapsed after the end of their respective terms.

ARTICLE VI.—MANAGEMENT.

1.—The Board of Direction shall be vested with the exercise of all the corporate powers of the Society, subject to this Constitution. It shall make provision in By-Laws for the duties of the several officers, and for the general administration of the affairs and property of the Society. It shall make an annual report at the Annual Meeting, transmitting therewith the report of the Treasurer, and such other reports as it shall deem advisable.

2.—Meetings of the Board of Direction shall be held at the time of the Annual Meeting and of the Annual Convention, at which meetings twelve members shall constitute a quorum; and in each year not less than four other meetings at such other times and places as the Board may determine, at which nine members shall constitute a quorum.

3.—The Board of Direction shall appoint from its members an Executive Committee not less than five in number, which Executive Committee shall exercise at times when the Board of Direction is not in session such part of the authority of the Board of Direction in the administration of the Society's affairs as may from time to time be delegated to it. But such Executive Committee shall not have power to amend the By-Laws, elect or expel members, nor to fill vacancies on the Board of Direction.

ARTICLE VII.—NOMINATION AND ELECTION OF OFFICERS.

1.—For the purpose of electing officers the territory occupied by the membership in North America shall be divided into districts, as herein provided. The Board of Direction shall, every year, review the existing divisions and if necessary make changes in their boundaries. The number of districts may be increased or decreased by the Board of Direction, but shall not be less than thirteen. District No. 1 shall be the territory within fifty miles of the Post Office in the City of New York. Each member shall be counted in the district within which his mailing address on record with the Society on the preceding January 1st, is located. Members not residing in North America shall be allocated to District No. 1.

Each district shall be as nearly as practicable:

First.—In one area.

Second.—So formed that the number of Directors from any district shall be one or more, as hereinafter stipulated regarding equality of representation.

Third.—Formed with due regard to mutuality of interests and facilities of travel between points within the district.

The Board of Direction shall announce the district boundaries, the number of Directors for each district, and the boundaries of the four zones as hereinafter provided, to the Corporate Membership not later than April 1st in each year.

2.—The Directors of the Society shall be eighteen in number and the number of Directors from each district shall be determined as follows:

Divide the total number of Corporate Members as of January 1st of the current calendar year, by eighteen. The quotient shall be the approximate number of Corporate Members for which there shall be one Director, but no district shall be without at least one Director. In case this method furnishes more than eighteen Directors, the Board of Direction shall determine in accordance with district membership as nearly as practicable in which district the representation shall be reduced.

One-third the number of Directors shall, as far as practicable, be elected each year.

3.—For the purpose of electing Vice-Presidents, the Board of Direction shall group the districts into four zones, each zone to consist of contiguous districts and to contain the same number of members as nearly as is practicable. There shall be four Vice-Presidents, two of which shall be chosen each year in such manner that each zone shall always be represented by a Vice-President.

4.—Not later than April 1st of each year, the Secretary of the Society shall, by mail, notify each Corporate Member that nominations are in order, and shall give a list of those offices which will be vacant at the end of the current year and for which the nominations are to be made. A suitable blank form, blank envelope, and outer envelope for a "first ballot" for "Official Nominees" shall be enclosed with this notice. Every Corporate Member is expected to submit the name of a nominee for the office of President. Every Corporate Member in any zone in which a vacancy is to be filled is expected to submit the name of a nominee for Vice-President in such zone; and every Corporate Member in a district in which there is a vacancy to be filled is expected to submit the names of nominees for Directors in his District. No "first ballot" received after May 31st shall be counted. The "first ballots" shall be canvassed on June 1st by a Committee consisting of not less than three Corporate Members duly appointed by the Board of Direction, or, if that date be a holiday or a Sunday, not later than June 3d. No vote of a Corporate Member for a nominee for Vice-President resident outside of the zone in which the voter resides, shall be counted; no vote of a Corporate Member for a nominee for Director resident outside of the district in which the voter resides, shall be counted. Not later than June 15th the Secretary shall send to each Corporate Member full information as to the results of said "first ballot" and a request for a "second ballot". Nominees for offices of President, Vice-President and Directors who shall have received less than 5% of the total votes cast for the respective offices on the "first ballot" shall be ineligible for the "second ballot". No "second ballot" received after August 14th shall be counted. The procedure for the "second ballot" shall be the same as the procedure for the "first ballot". The said

"second ballot" shall be canvassed on August 15th, or if that day be a holiday or Sunday, not later than August 17th, and the respective candidates who receive the greatest number of votes for each of the offices of President, Vice-President and Director shall be the "Official Nominees" for such respective offices.

In the event of a tie vote for nominee for President, Vice-President or Director on the "second ballot", the names of the persons receiving such tie vote shall be placed on the ticket as "Official Nominees".

5.—The nominations thus made for President, Vice-Presidents and Directors shall be designated as "Official Nominations". In case any nominee or officer shall change his residence from one district to another he shall represent the district from which he was nominated.

6.—If any person thus nominated shall be found by the Board of Direction to be ineligible for the office for which he is nominated; or should a nominee decline such nomination; or in the event that any zone or district should fail to select a nominee for any office as above stipulated, the Board of Direction shall select another nominee for the place, which nominee thus selected shall be the "Official Nominee".

The Secretary shall then prepare a list of "Official Nominees" showing also thereon the results of the "second ballot", which list shall be mailed not later than the first day of October to every Corporate Member whose address is known.

7.—Additional nominations for the officers to be elected may be made by declaration, provided such declaration is accompanied by an acceptance of the nomination signed by the nominee, and is filed with the Secretary before the first day of December, and further provided that each declaration shall be signed by at least twenty-five Corporate Members, resident within the district or zone to which the office is attached. Nominations made in accordance with this Section shall be known as "Nominations by Declaration".

8.—At least thirty days before the Annual Meeting there shall be mailed to every Corporate Member whose address is known a letter-ballot with envelopes for voting. This ballot shall include the names and residences of all persons nominated in accordance with this Article, the grades of membership, and in the case of nominees for Directors and Vice-Presidents indicating the district or zone in which they reside. Under the names of the nominees for each office so printed there shall be provided a space for the use of the voter if he desires to substitute another name. "Nominations by Declaration" shall be distinguished from "Official Nominations" by some convenient mark or words. There shall also be printed on the ballot the names and residences of the signers of each "Nomination by Declaration". Voters may strike out the name of any nominee printed on the ballot for whom they do not wish to vote, and may substitute therefor, in writing or by paster, the name of any person eligible for the office; but the number of names voted for for any office shall not exceed the number of persons to be elected in such office. Ballots not complying with these provisions shall be rejected. Directions in accordance with these provisions shall be issued with the ballots.

9.—Ballots may be sent by mail to the Secretary, or may be presented to him at the Society Headquarters. They shall be enclosed in two sealed envelopes, and the outer envelope shall be endorsed by the voter's signature.

No count or listing of votes cast in any Society canvass or election shall be permitted until after the polls are closed, and then only by the officially appointed committee or the Tellers. A voter may withdraw his ballot, and may substitute another at any time before the polls close.

10.—The polls shall be closed at 9 A. M. on the first day of the Annual Meeting, and the ballots shall be canvassed publicly by tellers, who shall be appointed by the presiding officer. The person receiving the largest number of votes for an office shall be declared elected. In case of a tie between two or more persons for the same office, the Annual Meeting shall elect the officer from among the persons so tied.

The presiding officer shall announce to the meeting the names of the officers elected.

ARTICLE VIII.—MEETINGS.

1.—An Annual Convention of the Society for the reading and discussion of professional papers and for professional intercourse shall be held annually at such time and place as the Board of Direction may determine.

2.—There shall be two general meetings of the Society each year; the Annual Meeting, which shall be held at the offices of the Society on the third Wednesday in January, and at which the annual reports for the year ending December 31st previous shall be presented, and the ballot for officers canvassed; and a Business Meeting during the Annual Convention, which meeting shall be held at a time and place to be determined by the Board of Direction.

At all meetings thirty Corporate Members shall constitute a quorum.

3.—Business meetings and other meetings may be called or scheduled at intervals by the Board of Direction. The call for any meeting shall be issued not less than fifteen days in advance. Upon written request of not less than thirty Corporate Members, which request shall state the purpose of the meeting, the Board of Direction shall call a special meeting of the Society. The call for such meeting shall be issued not less than fifteen days in advance and shall state the purpose thereof, and no other business shall be taken up at such meeting.

4.—The By-Laws shall provide rules for the order of business at meetings, but each Annual Convention or Annual Meeting may, without notice, by a two-thirds vote, modify or change these rules as to that meeting.

ARTICLE IX.—LOCAL SECTIONS.

Local Sections, composed of members of all grades, may be established in any locality, and such organization shall become effective as soon as the proposed Constitution and By-Laws of any Local Section shall have been submitted to and approved by the Board of Direction.

The Board of Direction may annually assign, from the funds of the Society, to each Local Section, a sum varying in proportion to its needs not to exceed three dollars for each member belonging to that Section.

The functions of Local Sections should be the encouragement of members to prepare or discuss papers, to confer and suggest as to matters of policy, to study local engineering problems, to co-operate with other Local Sections and local engineering societies in matters of common interest, and to bring about closer personal acquaintance and a spirit of co-operation between the engineers in a community.

Local Sections shall be encouraged by the Board of Direction to participate in the affairs of the Society. They shall not assume to speak for the Society unless authorized by the Board of Direction; violation of this rule shall constitute sufficient cause to terminate relationship of the Local Section with this Society.

ARTICLE X.—AMENDMENTS.

1.—Proposed amendments to this Constitution must be reduced to writing and signed by not less than thirty Corporate Members, and be submitted and acted upon as follows:

2.—Amendments presented to the Secretary not less than sixty days previous to the date of the Annual Convention shall be sent by letter to the Corporate Members of the Society, at least twenty-five days previous to the Annual Convention. Said amendments shall be in order for discussion at the Business Meeting during such Annual Convention, and may be amended in any manner pertinent to the original amendments by a majority vote of the Business Meeting during the Annual Convention, and, if so amended, shall be voted upon by letter-ballot in form as amended by said Business Meeting; if not so amended, they shall be voted upon by letter-ballot as submitted. The vote shall be counted at the first regular meeting in October.

3.—Amendments presented to the Secretary on or before the first Wednesday in November, but not later than sixty days previous to the date of the Annual Convention, shall be sent by letter to the Corporate Members of the Society at least twenty-five days previous to the Annual Meeting. Such amendments shall be in order for discussion at such Annual Meeting, and may be amended in any manner pertinent to the original amendments by a majority vote of the Annual Meeting, and if so amended shall be voted upon by letter-ballot in form as amended by the Annual Meeting; if not so amended, they shall be voted upon by letter-ballot as submitted. The vote shall be counted at the first regular meeting in March.

4.—If, after discussion of a proposed amendment, at either of the general meetings of the Society, the meeting shall so decide by a majority vote, it may refer the amendment to a Committee for further consideration, which Committee shall report at the next general meeting, whereupon the amendment shall be voted upon as hereinbefore provided.

5.—An affirmative vote of two-thirds of all ballots cast shall be necessary to the adoption of any amendment.

Amendments so adopted shall take effect thirty days after their adoption, provided that the officers of the Society, at the time any amendment may be adopted, shall continue in office until the expiration of the terms for which they were elected.

6.—The Board of Direction may by a two-thirds vote of those present at a meeting duly called, amend the By-Laws consistently with this Constitution, provided that a written notice of such proposed amendment shall have been given at a previous meeting of the Board of Direction, and that the Secretary shall have mailed a copy of such proposed amendment to each member of the Board at least thirty days before the meeting at which action thereon is to be taken.

BY-LAWS

ARTICLE I.—ELECTION OF MEMBERS.

1.—An application for admission to the Society or for transfer from one grade to another shall embody a concise statement, with dates, of the candidate's professional training and experience; and shall be in a form and in such detail as may be prescribed by the Board of Direction. It shall be signed by the applicant, and shall contain a promise to conform to the requirements of membership, if elected. The applicant shall furnish the names of at least five Corporate Members to whom he is personally known. Each of these shall be requested by the Secretary to address a letter to the Board of Direction, on a form prescribed by said Board, stating the extent of the writer's personal knowledge of the applicant and of his professional work. If at least five of the Corporate Members named as references do not furnish the requisite endorsement, the Secretary shall call upon the applicant for additional names, and not until written communication shall have been received from at least five Corporate Members shall the application be considered by the Board.

In order to insure the fulfillment of these requirements, each applicant for admission or for transfer shall be required to furnish, if possible, the names of persons, whether members of the Society or not, who have personal knowledge of his work in each of the positions enumerated in his application. If possible, he shall name more than five references, and his application shall state in detail the character and extent of the works on which he has been engaged, and the degree to which he was responsible for their design and execution.

In considering the requirements for the grade of Member, the words "responsible charge of work" shall be interpreted to refer to work of considerable magnitude for which rule-of-thumb methods are not sufficient.

Applications of engineers not resident in North America, and who may be so situated as not to be personally known to five Corporate Members, may be recommended for ballot by five members of the Board of Direction, after having secured evidence sufficient, in their opinion, to show that the applicant is worthy of admission.

2.—At stated periods, to be determined by the Board of Direction, there shall be issued to each member in any grade whose address is known, a list of all new applications received for admission or for transfer, which list shall be dated and shall contain a concise statement of the record of each applicant and the names of his references, with a request that members transmit to the Board any information in their possession which may affect the disposition of the application. Not less than twenty days after the issue of such list, the Board of Direction shall consider these applications, together with any infor-

mation in regard to the applicants that may have been received; may make further inquiries, if deemed expedient; shall classify the applicant with his consent, and on applications for admissions shall vote thereon by ballot.

The Board shall have the power to elect persons to any grade, and to transfer persons from any grade to a higher grade of membership, and shall notify the membership of its action.

3.—The ballots shall be letter-ballots, in a form to be prescribed by the Board of Direction. They shall be mailed to each member of the Board of Direction, and shall state the date on which the ballot is to be canvassed, which shall be not less than twenty days after the issue of the ballot. In case of exclusion, no notice thereof shall be entered on the minutes, but the candidates shall be notified.

A rejected applicant may renew his application for membership or transfer at any time after the expiration of one year from the date of the ballot rejecting his previous application.

4.—All elected candidates shall be duly notified and shall subscribe to the Constitution and Rules of the Society. Forms for these purposes shall be prescribed by the Board of Direction. If these provisions are not complied with within six months from the notification of election, such election shall be considered void unless for special reason the time shall be extended by the Board of Direction.

Membership of any person shall date from the day of his election.

ARTICLE II.—PAYMENT OF DUES.

1.—Dues shall be payable annually in advance on January 1st. Persons elected after six months of any calendar year shall have expired shall pay only one-half of the annual dues for that year. A person transferred from any grade to a higher grade shall pay the difference between the entrance fees of the two grades and his annual dues shall be those of the higher grade.

2.—The Secretary shall notify each member at his last address appearing upon the books of the Society of the amount due for the ensuing year, at the time of giving notice of the Annual Meeting.

3.—Any person whose dues are more than three months in arrears shall be notified by the Secretary. Should his dues not be paid when they become six months in arrears, he shall lose the right to vote or to receive the publications of the Society. Should his dues become nine months in arrears, he shall again be notified in form prescribed by the Board of Direction, and if such dues become one year in arrears, he shall forfeit his connection with the Society. The Board of Direction, however, may, for cause deemed by it sufficient, extend the time for payment and for the application of these penalties.

4.—The Board of Direction may, for sufficient cause, temporarily excuse from payment of annual dues any member who from ill health, advanced age, or other good reason assigned, is unable to pay such dues; and the Board may remit the whole or part of dues in arrears, or accept in lieu thereof, desirable additions to the library, or collections.

5.—Every person admitted to the Society shall be considered as belonging thereto and liable for the payment of all dues until he shall have resigned, been expelled, or have been relieved therefrom by the Board of Direction.

ARTICLE III.—MANAGEMENT.

1.—The Board of Direction shall manage the affairs of the Society in conformity to the laws under which the Society is organized and the provisions of the Constitution. It shall direct the investment and care of the funds of the Society; make appropriations for specific purposes; act upon applications for membership as heretofore provided; take measures to advance the interests of the Society; appoint all its employees; and generally direct its business. The Board of Direction shall make an annual report at the Annual Meeting, transmitting the report of the Treasurer and of other officers, and of Committees.

2.—The President shall have general supervision of the affairs of the Society. He shall preside at meetings of the Society and of the Board of Direction at which he may be present, and shall be *ex-officio* member of all committees. He shall deliver an address at the Annual Convention.

The Vice-Presidents in order of seniority shall preside at meetings in the absence of the President, and discharge his duties in case of absence or disability of the President.

3.—The Secretary and the Treasurer shall be Corporate Members of the Society. They shall be appointed each year by the Board of Direction at the second meeting held after the Annual Meeting, or at an adjourned, or subsequent meeting, and shall hold office during the pleasure of the Board of Direction or until their successors are appointed, provided that a majority of the whole Board of Direction shall be required to appoint them or to terminate their service within the year. This vote is to be given, if necessary, by letter. In case of termination of service of either the Secretary or the Treasurer a successor may be elected at the second, or any subsequent meeting held thereafter, by the Board of Direction.

4.—The Secretary shall be, under the direction of the President and Board of Direction, the executive officer of the Society.

He will be expected to attend all meetings of the Society and of the Board of Direction; prepare the business therefor, and duly record the proceedings thereof.

He shall see that all moneys due the Society are carefully collected, and without loss transferred to the custody of the Treasurer.

He shall carefully scrutinize all expenditures and use his best endeavor to secure economy in the administration of the Society.

He shall personally certify the accuracy of all bills or vouchers on which money is to be paid, and shall countersign the checks drawn by the Treasurer against the funds of the Society, when such drafts are known to him to be proper and duly authorized by the Executive Committee.

He shall have charge of the books of account of the Society, and shall furnish monthly to the Board of Direction a statement of receipts and expenditures under their several headings, and also a statement of monthly

balances. He shall present annually, to the Board of Direction, a balance sheet of his books, as of the 31st of December, and shall furnish, from time to time, such other statements as may be required of him.

He shall conduct the correspondence of the Society and keep full records of the same.

He shall have charge of the Society's rooms and their contents; shall supervise the work of all employees of the Society, and see that they diligently perform their respective duties.

He shall perform all other duties which may from time to time be assigned to him by the Board of Direction.

5.—The Treasurer shall receive all moneys and deposit the same in the name of the Society. He shall invest all funds not needed for current disbursements, as shall be ordered by the Board of Direction. He shall pay all bills, when certified and audited, as provided by these By-Laws and by rules to be prescribed by the Board of Direction. He shall make an annual report and such other reports as may be prescribed by the Board of Direction.

The Board of Direction shall secure satisfactory surety for the faithful performance of the duties of the Secretary and of the Treasurer.

6.—The Board of Direction may appoint an Assistant Secretary, who shall aid the Secretary and be under his immediate direction. The whole time of the Secretary and the Assistant Secretary shall be given to the Society.

7.—The Secretary and the Treasurer shall be paid salaries to be determined by the Board of Direction.

ARTICLE IV.—COMMITTEES.

1.—The Board of Direction shall meet within twenty days after the Annual Meeting, and shall then appoint the following standing committees:

An Executive Committee, as provided in Section 3 of Article VI of the Constitution.

A Public Relations Committee.

A Committee on Publications.

A Committee on Special Committees.

All committees shall report to the Board of Direction and perform their duties under its supervision.

2.—The Executive Committee shall have immediate supervision of the financial affairs of the Society; shall employ an expert accountant to audit the accounts monthly; shall approve all bills before payment, and shall make recommendations to the Board of Direction as to the investment of moneys, and as to other financial matters.

3.—The Public Relations Committee shall consist of five members, one from each of the Vice-Presidential zones and one from the Board of Direction. It shall consider and report to the Board of Direction upon such matters of public policy and professional relations as the Board may refer to it and shall call the attention of the Board, from time to time, to such matters affecting the welfare of the Society, or its members, or the Engineering Profession, as in

its opinion should receive consideration or action on the part of the Board of Direction or of the Society.

4.—The Committee on Publications shall consist of five members, at least one being a member of the Board of Direction. It shall have general supervision of the publications of the Society, and of the performance of contracts and expenditures connected therewith, and shall be authorized to make general rules for the preparation and presentation of papers.

5.—The Committee on Special Committees shall consist of three members of the Board of Direction and shall oversee, on behalf of the Board of Direction, all the work of special committees, and pass upon and approve all the expenditures of such special committees, and shall from time to time make a recommendation to the Board of Direction concerning the progress of the work of such special committees with recommendation for further work or modification of or cessation of work of such special committees.

6.—The Board of Direction may from time to time appoint such special committees as in its judgment may be necessary.

7.—Such special committees shall, except where otherwise specifically directed or authorized by the Board of Direction, be subject to the following rules and procedure:

Government.—All special committees shall report on all matters relating to procedure and expenditures to the permanent Committee on Special Committees of the Board of Direction, which Committee is charged with overseeing, on behalf of the Board, all the work of special committees and the approval of all expenditures of such special committees.

Personnel.—Appointments on committees are made by the Board of Direction from the membership of the Society, and will continue from year to year, except when changes are announced by the Board. Before members are appointed, the Board shall have their assurance that the work of the Committee will have their interest and co-operation. A member of any Committee who does not take an active interest in its work and does not regularly attend its meetings during the year, nor render adequate service by correspondence, may be relieved, and the vacancy filled by the Board. A member of a special committee may retire as such upon request given in writing to the Board.

After the Board of Direction has appointed the Chairman of a special committee, the Board will consult with the Chairman as to the personnel of the committee. Additional appointments on existing committees shall be made only on the recommendation of, or with the approval of, such committees.

Funds.—The Chairman of each special committee, as soon after the appointment of the committee as possible, shall prepare, and submit to the Board, a budget of itemized expenses covering the requirements of the committee for the remainder of that year; thereafter he shall submit a yearly budget to be tendered not later than December 31st. These budgets shall be scrutinized and such appropriations approved as may, in the judgment of the Board of Direction, be considered expedient. All bills submitted by a special committee must bear the approval of its Chairman and Secretary.

Expenses.—No member of a special committee shall receive a salary for his services as such, nor any per diem allowance in addition to mileage. Expenses

for items other than stationery and postage shall not be assumed by the Society, unless such expenditures were incurred in pursuance of previous authorization of the Board or referred to in the annual budget.

Extraordinary expenses, such as purchase of instruments, salaries of special employees and traveling expenses, must be specifically authorized and approved by the Chairman of the committee concerned. The Chairman of each special committee shall return its tangible property and records to the Society on the completion of its work.

Officers.—The officers of special committees shall be a Chairman, appointed by the Board of Direction, and a Secretary, elected by the Committee, who shall assume their duties immediately after appointment.

Duties of Officers.—The Chairman shall preside at all meetings of the Committee, appoint all sub-committees unless otherwise directed, and be *ex-officio* a member of all sub-committees.

The Secretary of the Committee will be expected to attend all meetings of the committee, keep a roll call of the members in attendance, and record the minutes in a book kept for that purpose; and

(a).—He shall conduct the correspondence, and receive all communications addressed to the committee, and furnish each member a complete copy of all communications.

(b).—He shall read the minutes at all meetings, and issue notices for all meetings and promptly inform sub-committees of their appointments and duties.

(c).—He shall keep a memorandum of all expenses of the committee. He shall prepare an abstract of the minutes of all meetings and forward same to the Board of Direction for publication in the monthly *Proceedings*, and shall perform such other duties as may be required of him.

Meetings.—The committee shall hold a meeting as soon as practicable after its appointment, at which time Sub-Committees on Organization and Scope of the work contemplated shall be appointed.

At least two regular meetings of the committee shall be held each year, the time and place to be fixed by the Chairman; special meetings may be called at the option of the Chairman or at the request of the majority of the committee; due notice of such meetings to be given to the Secretary of the Society and to the members of the committee.

Reports.—Each special committee shall make either a progress or final report of the work accomplished by it during the year, for presentation to the Annual Meeting. The reports of Special Committees shall be filed with the Secretary of the Society at least 60 days before the Annual Meeting.

No final action on committee reports may be taken except at a meeting called for that purpose. Final reports shall receive the approval of a majority of those voting. Dissenting members may present minority reports individually or jointly. Those refraining from voting shall be named in the report. The printing of all reports of special committees shall be executed through the Standing Committee on Publications.

ARTICLE V.—STUDENT CHAPTERS.

1.—A Student Chapter in affiliation with the American Society of Civil Engineers, composed of students of schools of engineering of recognized reputation, may be organized upon favorable vote by the Board of Direction. The name of such an affiliated society shall be "The.....* Student Chapter of the American Society of Civil Engineers."

2.—The qualifications required of a proposed Student Chapter shall include:

- (a).—An organization of students in an engineering school of high standing;
- (b).—The endorsement of the application by the head of the civil engineering department;
- (c).—A minimum membership of twenty students.

3.—Each Student Chapter shall establish its own rules of government and procedure which shall conform with any regulations which may be formulated by the American Society of Civil Engineers. It is also intended that each Student Chapter shall control the occurrence and character of its own meetings; but the American Society of Civil Engineers desires especially to aid in promoting the success and value of student chapters by frequent consultations and advice, as well as by arranging for speakers, on request, whose addresses will broadly supplement the class-work of the members. Each Student Chapter is authorized to communicate direct with the Local Section or local members in whose territory it is situated, to arrange for speakers and for other co-operation.

4.—Each Student Chapter shall submit an annual report, not later than the last day of December of each year, which shall include

- (a).—A summary statement of the meetings held during the calendar year; giving the date of each, the attendance, the principal speaker and his subject, and other pertinent information;
- (b).—Names of the officers, and of the members by classes, at the date of the report.

5.—Any address or paper read before a Student Chapter may be offered for publication to the American Society of Civil Engineers under the general provisions established for this procedure, and shall be submitted to the Board of Direction when requested by the said Board or when such Chapter desires to publish it in a local journal or elsewhere; it being understood that the privilege of priority in publications exists in the American Society of Civil Engineers, though the Society claims no exclusive copyright upon such papers.

6.—The annual dues of each Student Chapter shall be \$10.00 per year, which, under provisions approved by the Board of Direction, shall entitle it to the following:

- (a).—A copy of each issue of the *Proceedings* of the American Society of Civil Engineers and of all papers and discussions;

* Insert the name of the educational institution at which the particular Student Chapter is situated, for example, "Stanford University."

- (b).—The opportunity to publish notices of its chapter activities, etc., in publications of the American Society of Civil Engineers;
- (c).—The active co-operation of the American Society of Civil Engineers in advancing the interests of each Student Chapter by contributing (from its organization, membership, and experience) such service as may be mutually arranged.

The annual dues shall apply to the current fiscal year and shall be payable in advance, due January 1st. The Secretary of the American Society of Civil Engineers shall send out bills for dues each December for the following year. Student Chapters admitted on or after July 1st of each year shall pay \$5.00 only for the balance of the current fiscal year.

7.—Among the privileges offered to the members of Student Chapters are:

- (a).—Individual subscription to the *Proceedings* of the American Society of Civil Engineers at a special price of \$3.00 per year;
- (b).—To receive at cost, on request, copies of such separate papers as may be printed in pamphlet form;
- (c).—To use on all official stationery the special official emblem prescribed in Section 8;
- (d).—A membership card, of special design, prescribed in Section 9, to be issued annually;
- (e).—The right to attend the meetings and accompany inspection trips and excursions arranged for members of the American Society of Civil Engineers;
- (f).—Provision for the publication of requests for summer employment during the college course, or for permanent engagement after graduation on such terms as the Board of Direction may prescribe; and
- (g).—The opportunity to hear, on special occasions, speakers whose personal experiences qualify them to speak with authority upon the many questions which are of particular importance to the student during his college course.

8.—The official emblem for stationery for Student Chapters shall be in strict accord with a standard design, as prescribed by the Board of Direction.

9.—The membership cards shall be supplied and signed by the Secretary of the American Society of Civil Engineers, in accordance with official annual lists furnished by the secretaries of the Student Chapters.

10.—Applications for admission of Student Chapters to the American Society of Civil Engineers shall be in a form prescribed by the Board of Direction.

11.—A Student Chapter may be disbanded upon the approval of the Board of Direction, provided its annual dues for the current calendar year have been paid. The Board of Direction may discontinue a Student Chapter if its annual dues are not paid promptly, or if it becomes inactive, or if its continuance is considered not for the best interest of the Society.

ARTICLE VI.—MEETINGS.

1.—Business meetings of the Society shall be held monthly on the first Wednesday of each month, except during the months of July and August. In addition to the Annual Meeting and the Annual Convention, meetings for the reading and discussion of papers shall be held as ordered by the Board of Direction.

2.—The order of business at meetings of the Society unless otherwise provided shall be as follows:

ANNUAL MEETING.

Appointment of Tellers to Canvass Ballot for Officers.

Report of the Board of Direction.

Report of the Secretary.

Report of the Treasurer.

Reports of Special Committees.

Announcements and Reports by the Secretary.

Report of Tellers to Canvass Ballot for Officers.

New Business.

REGULAR BUSINESS MEETINGS.

Minutes.

Announcements by the Secretary.

New Business.

Presentation of Papers.

ARTICLE VII.—(TRANSITORY.)

At least thirty days before the Annual Meeting to be held in the month of January in the year 1922, there shall be mailed to every Corporate Member whose address is known, a letter-ballot with envelopes for voting. This ballot shall include the names and residences of all persons nominated in accordance with the provisions of Article VII of the Constitution as in force up to the time of the going into effect of this amendment, with the grades of membership, and, in the case of nominees for Directors, the number of the district in which they reside; and in addition thereto such additional "Nominations by Declaration" as shall be made and filed with the Secretary before the first day of December, 1921, in accordance with the provisions of Section 7 of Article VII of the Constitution as amended. Under the names of the nominees for each office so printed, there shall be provided a space for the use of the voter if he desires to substitute another name. "Nominations by Declaration" shall be distinguished by some convenient marking or words. There shall also be printed on the ballot the names of the Nominating Committee as created by Section 2 of Article VII of the Constitution as in effect prior to November 1st, 1921, with the numbers of the Districts which the appointed members represent, and also in a separate list thereon the names and residences of the signers of each "Nomination by Declaration". The voters may strike out the name of any nominee printed on the ballot for whom they do not wish to vote and may substitute therefor in writing or by paster the name of any person eligible for the office, but the number of names voted for for any office shall

not exceed the number of persons to be elected to such office. Ballots not complying with these provisions shall be rejected.

The conduct of the election at the Annual Meeting to be held in January, 1922, shall in all other respects be as provided in Sections 9 and 10 of Article VII of the amended Constitution.

Directions in accordance with these provisions shall be issued with the ballots.

This By-Law is transitory and is to provide only for the procedure at the Annual Meeting in January, 1922, and this By-Law shall thereafter be void and of no effect.

**Letter from Parker and Aaron *in re* Legality of
Proposed Constitution and By-Laws**

NEW YORK, JUNE 1, 1921.

ELBERT M. CHANDLER, ESQ.,

*Acting Secretary, AMERICAN SOCIETY OF CIVIL ENGINEERS,
29 West 39th St., City.*

DEAR SIR:

Pursuant to your request, we state herewith our opinion as to the legality of the proposed revised Constitution of your Society approved at the Annual Convention held April 27th to 30th, 1921, and presently to be submitted to the vote of your Corporate Members pursuant to the provisions of Article IX of your existing Constitution.

The American Society of Civil Engineers became a body corporate under the laws of the State of New York by the filing in the year 1877 of a Certificate of Incorporation under the provisions of Chapter 319 of the Laws of 1848, the certificate having been approved by a Justice of the Supreme Court. This certificate of incorporation required merely the setting forth of the name of the Society, its business and objects, the number of its trustees and the location of its principal office. The Act of 1848 provided that a corporation so duly organized might "make by-laws for the management of its affairs, not inconsistent with the Constitution and Laws of this State or of the United States". Pursuant to that authority, a Constitution containing various provisions was adopted and has been from time to time amended.

The corporation is at the present time subject to and governed by the provisions of the Membership Corporations Law of the State of New York, which supersedes the Act of 1848. The Membership Corporations Law provides:

"By-Laws of a membership corporation created by or under a general or special law may be divided into different classes and designated as Constitution, By-Laws, Rules, Regulations, or otherwise, and may provide different methods for amending and repealing such classes respectively."

The matters which may be embraced in such By-Laws are specified in the Membership Corporations Law as follows:

"The by-laws of any such corporation may make provisions, not inconsistent with law or with its certificate of incorporation, regulating the admission, voluntary withdrawal, censure, suspension and expulsion of members;

the fees and dues of members and the termination of membership on non-payment thereof or otherwise; the number, times and manner of choosing, qualifications, terms of office, official designations, powers, duties and compensation of its officers; what shall constitute a vacancy in the office of any such officer and the manner of filling it; the number of members, not less than one-third, or, if one-third be nine or more, not less than nine, whose presence shall be necessary to constitute a quorum at its meetings; the qualifications of voters at its meetings; the eligibility of members to be directors; and the classification of its directors into not more than five classes, so that the term of office of all the directors of one class only shall expire each year, and that the term of office of their successors shall be as many years as there are classes, but not so as to change the term of office of any director then in office."

As authorized by the statute, your present Constitution, which is in the statutory nomenclature a by-law, embraces provisions for its own amendment, which, having been heretofore duly adopted, apply to and control the proposed revised Constitution. The provision applicable thereto is Paragraph 3 of Article IX which provides as follows:

"Amendments presented to the Secretary not less than sixty days previous to the date of the Annual Convention shall be sent by letter to the several Corporate Members of the Society, at least twenty-five days previous to the Annual Convention. Said amendments shall be in order for discussion at the Business Meeting during such Annual Convention, and may be amended in any manner pertinent to the original amendments by a majority vote of the Business Meeting during the Annual Convention, and, if so amended, shall be voted upon by letter-ballot in form as amended by said Business Meeting; if not so amended, they shall be voted upon by letter-ballot as submitted. The vote to be counted at the first regular meeting in October."

The revised Constitution was presented to the Secretary as a proposed amendment to the present Constitution, reduced to writing and signed by not less than five corporate members not less than sixty days previous to the Annual Convention held April 27th, 1921, and was thereupon sent by letter to the several Corporate Members of the Society at least twenty-five days previous to the Annual Convention. At the business meeting during this Annual Convention it was amended by seven minor amendments recommended by the Committee on Referred Amendments. As so amended, it should be voted upon by letter-ballot of the Corporate Membership and the vote thereon should be counted at the first regular meeting of the Society in October, 1921. An affirmative vote of two-thirds of the ballots cast is required for the adoption of the amendment, and if so adopted it will take effect thirty days after such adoption; in other words, thirty days after the first regular meeting in October, 1921.

The form, therefore, of the proposed Constitution and By-Laws and the procedure under way for its submission to the Corporate Members is, in our opinion, in accordance with the statutory provisions and the requirements of your existing Constitution.

There remains the question whether the substance of the proposed revised Constitution and By-Laws is within the corporate powers of your Society. The minor amendments approved at the Annual Convention do not raise any new question, and we therefore repeat the opinion which we rendered to the

Chairman of the Committee on Referred Amendments in our letter of February 18th, 1921, reading as follows:

"In our opinion, the provisions of the Constitution and By-Laws as now revised, do not conflict with any of the statutory provisions of this State. Your Society since its beginning, in common with other large societies having a general similar organization, has provided for annual conventions outside of the State, and for the election of officers by letter-ballot of members. This practice is retained in the present Constitution. While there is no express authority for the procedure as to these two matters contained in the New York State Law, we do not believe that the retention of these provisions will ever produce any legal difficulty that cannot readily be obviated at the time, and the advantage of holding the Annual Convention, for example, outside the State and in having the members vote by letter-ballot, is so obvious that we feel the Society is fully justified as a practical matter in following the usual practice.

"With respect to the Board of Direction, the Constitution makes general provisions. The Board will realize that in carrying out the duties and powers conferred upon them, they are of course subject to the requirements of the New York State Statutes, which in various matters limit or prescribe the form of their activities. We see, however, no occasion for referring to those limitations in more detail than is already done in the Constitution and By-Laws, assuming of course that when any particular matter comes up about which there might be question, the Board of Direction will comply with the statutory procedure."

We call attention to the fact that by reason of the provisions of the statute regarding by-laws, the adoption of the revised Constitution will not "change the term of office of any Director then in office", so that the tenure of the existing Past-Presidents as Directors would not be affected by the adoption of the revised Constitution, for they will be entitled to serve out the respective terms which they would hold under the existing Constitution.

Very truly yours,

PARKER AND AARON.

ITEMS OF INTEREST

This Society is not responsible for any statement made or opinion expressed in its publications.

The Committee on Publications will be glad to receive communications of general interest to the Society, and will consider them for publication in *Proceedings* in "Items of Interest". This is intended to cover letters or suggestions from our membership concerning matters which are not of a technical character. Such communications, however, must not be controversial or commercial.

THE ENGINEERING FOUNDATION

The Engineering Foundation was established in 1914 "for the furtherance of research in science and engineering, or for the advancement in any other manner of the Profession of Engineering and the good of mankind", and for the following purposes: To promote and support worthy researches related to engineering in all its branches; to establish and operate engineering research laboratories, if funds be provided therefor; to co-operate with National Research Council and the Engineering Societies in the stimulation and co-ordination of scientific research.

ENDOWMENT FUNDS NEEDED.

The Foundation needs a large increase of endowment. It is obliged frequently to refuse to support research projects brought to it because it lacks funds. Gifts of \$1 000 or more are desired. Each donor of \$250 000 or more will be honored as a Founder. A gift of \$50 000 has been offered contingent on the receipt of nine other gifts of \$50 000 each. Gifts to the Foundation are exempt from income tax. A gift for research is a productive investment.

The Foundation is compiling a directory of the hydraulic laboratories of the United States, and is planning an investigation of industrial education and training. It undertakes useful researches which do not promise profits sufficient to tempt industrial organizations to undertake them, researches which should be made under disinterested auspices, and researches which lie outside the province of Government bureaus.

The Engineering Foundation is administered under the auspices of the United Engineering Society, the American Society of Civil Engineers, the American Institute of Mining and Metallurgical Engineers, the American Society of Mechanical Engineers, and the American Institute of Electrical Engineers, by a board of thirteen representatives of these Societies, and three members at large.

A progress report of the Foundation, a form of Deed of Gift, and other information will be sent by the Secretary, Alfred D. Flinn, M. Am. Soc. C. E., 29 West 39th Street, New York City, on request.

Entertainment of Delegation from American Engineering Societies in England and France

On June 28th, 1921, a Council Dinner was given by the Institution of Civil Engineers in honor of the visiting delegates from the American Engineering Societies sent to England and France for the purpose of presenting the John Fritz Medal to Sir Robert A. Hadfield and to Mr. Charles Prosper Eugene Schneider. In transmitting fraternal greetings from the American Society of Civil Engineers and an appreciation of the work done by the British engineers during the World War, Charles T. Main, M. Am. Soc. C. E., Chairman of the representatives of the Society on this delegation, made the following brief address:

"Mr. Chairman, Mr. President, and Members of the Council of the British Institution of Civil Engineers:

"The American Society of Civil Engineers has requested its members who are among the delegation of American engineers to the meetings of the British engineers, to extend to the Institution of Civil Engineers a word of greeting and appreciation for the great work which the British engineers performed in the recent war, and to urge a continuance of the cordial relations which have existed so long between the engineers of both countries.

"The word of appreciation is extended also to the other branches of the Engineering Profession in Great Britain, and it is with great satisfaction that the members of the deputation transmit this message to you all.

"It is extremely unfortunate that there are agencies at work to overturn the old form of government in this country and to sow dissension and possibly create strife between our two countries. The character and common sense of the people of your country will overcome the first, and it is the duty of all serious thinking people to endeavor to counteract the effect of the second, and to do all in their power to continue the friendly and helpful relationship of the two countries.

"And so we are here to express the appreciation of the Engineering Profession, which is composed largely of men who think straight, of the high purposes and mighty actions of the thinking of your country, and to pledge so far as we are able, the support of our people in the maintenance of the proper conduct of the affairs of both countries in a united effort to maintain civilization on a high level.

"The united efforts of Great Britain, France, and the United States of America, will make a strong force in this direction.

"There must of necessity be differences of policy in the affairs of the different countries, but if these differences are understood there will be no dissension.

"I have no authority for saying it, but it is my opinion that, in due season, when it can be worked out to the satisfaction of the majority of those in power in the United States, that there will be some sort of working agreement between the two countries with reference to world affairs.

"Your country has suffered enormously in comparison with our's during the great war in lives and money. Your problems of readjustment are more acute than our's, but many of the problems are fundamentally the same in character. Many of the problems are largely of an engineering nature and the engineers of America are confident that if they are given the opportunity, they can be of assistance to the Government and to private enterprises in the adjustment of some of these problems.

"The most acute problems in both countries is one of human engineering, namely, the readjustment of labor and, by labor, I mean all those who work with their hands or brains. The liquidation of labor is only one phase in the

problem. The realization of the necessity of greater efficiency or productivity is fully as essential.

"It is the duty of the engineers, personally and collectively, to do whatever they can or are allowed to do toward a fairly satisfactory solution of this broad question.

"The solution of these varied problems should be somewhat similar in the two countries, and with a medium of communication the efforts of each should be helpful to the other. You are fighting our industrial battles. If you fail we shall be obliged to take up the fight with greater vigor.

"The engineers of America would welcome the opportunity of being in any way helpful to the British engineers or to the industries of the British Empire."

This dinner was the first official function participated in by the American engineers, and was followed by the James Forrest Lecture on "Fuel Problems of the Future" by Sir George T. Beilby.

The Engineering Conference held under the auspices of the Institution of Civil Engineers, was opened on June 29th, 1921, by the President, Mr. John A. Brodie, who welcomed the American engineering delegates. Mr. Brodie was followed by Ambrose Swasey, Hon. M. Am. Soc. C. E., who replied to the speech of welcome and by Dr. Ira N. Hollis. The presentation of the engrossed resolutions and of the John Fritz Medal to Sir Robert A. Hadfield, and his reply, ended the ceremonies.

On the following days, the members of the delegation attended the meetings of the Conference and made excursions to various engineering works. The official functions and entertainments were briefly as follows: A luncheon on June 29th, 1921, at Goldsmiths' Hall, given by the Iron and Steel Institute, the Institution of Mining Engineers, Institute of Mining and Metallurgy, the Institution of Mechanical Engineers, and the Institution of Electrical Engineers. The evening was devoted to an exhibition of photographs of war areas by the Institution of Civil Engineers. On June 30th, 1921, there was a meeting at the headquarters of the Institution of Mechanical Engineers with an address of welcome by the President, Capt. H. Riall Sankey; and in the evening a dinner was tendered the delegates by the Institution of Electrical Engineers at the Royal Palace Hotel, which was followed by a *Conversazione* at the Natural History Museum. On July 1st, 1921, there was a dinner with the Council of the Institution of Mechanical Engineers at the St. Stephen's Club. This dinner was followed by a reception to the delegates by Sir Robert and Lady Hadfield.

During the visit of the delegation to London, Honorary Membership was conferred by the Institution of Mechanical Engineers on Mr. Swasey, and Mr. Charles F. Rand was made a Honorary Member of one of the Institutions of Mining Engineers.

On July 5th, 1921, the members of the delegation went to Paris, France, and, on July 8th, the official meetings with the French engineers were held as follows: A reception by M. G. Eiffel in his apartments on the Third Stage of the Eiffel Tower, which was followed by luncheon on the First Stage of the Tower. The luncheon was attended by many French engineers and others of prominence, and the members of the delegation were welcomed by M. Chagnaud, President, Société des Ingénieurs Civils de France, to which

welcome Dr. A. E. Kennelly replied in French. In the evening there was a meeting with the French Society at its building, at which the President of the Society again welcomed the members of the delegation. Mr. Swasey responded and was followed by Dr. Hollis who made an address and presented the engrossed resolutions to the French Society. Mr. Jesse M. Smith explained the purpose of the John Fritz Medal in French, and Mr. Swasey presented the medal to Mr. Charles Prosper Eugene Schneider who replied first in English and then in French. The order of the Legion of Honor was conferred on Mr. Swasey.

There was an "Excursion de la Société à Chambéry, Grenoble, les Alpes, and Marseille," which left Paris on the night of July 10th, 1921, and returned on July 17th, in which Messrs. John R. Freeman and Robert A. Cummings, Members, Am. Soc. C. E., took part. There was also a visit to the Creusot Works.

In connection with the visit of the delegation from the American Engineering Societies to England and France, Mr. Main writes as follows:

"The results of our visit may not be apparent on the surface, but I am sure that the engineers have assisted in cementing closer the cordial relations and friendship already existing between the engineers of Great Britain and France and the engineers of America, and that the cumulative result of such meetings as the Engineering Conferences, the Second World Cotton Conference, * * * the International Chamber of Commerce, * * * the Rotary Clubs, the Bankers Association, and similar bodies, must be of assistance in clearing away misunderstandings and bringing the countries closer together."

PROPOSED WELCOME TO DELEGATION OF AMERICAN ENGINEERS.

The delegation of American Engineers will be welcomed at a dinner to be held in their honor at 6.30 P. M., on Monday, October 10th, 1921, at the Engineers' Club, 32 West 40th Street, New York City.

Suggestions for Comprehensive Programme for Highway Research

In a paper presented before the Conference on Highway Economics, held at the University of Maryland, Baltimore, Md., on July 27th, 1921, W. K. Hatt, M. Am. Soc. C. E., who was recently appointed Director of the Advisory Board on Highway Research of National Research Council,* stated that "the field of research on cost of vehicle operation arising from the road surface and from the vehicle itself, must be kept in the foreground", and that "for the purpose of a co-ordinated and comprehensive programme of Highway Research, the writer has been endeavoring to bring into the picture all the elements of the situation in Highway Transport; Engineering, including Vehicle and Road; Economics of Transportation; Administration; Finance."

In the course of his remarks, Director Hatt also asked the following fundamental questions relative to Highway Transport, stating that they could not be answered completely without data which are unavailable at present:

"The Transport Unit:

- "(1) What is the economical highway truck unit for each of the several situations, *e. g.*, intercity, farm to market? What is the cost of transport arising from vehicle and from road?

* *Proceedings*, Am. Soc. C. E., August, 1921, p. 611.

- "(2) What is the relation of this economical unit to other systems of transport, *e. g.*, electric and steam, in a unified system?
- "(3) To what extent, as a matter of public policy, should any transport unit be indirectly subsidized?
- "(4) What traffic regulations should be imposed on such economical unit over other types of road? What fees should be charged for service rendered to vehicle by the road?
- "(5) What should be the proportion of the total traffic supplied by such economical unit to justify a special design of road for such unit?
- "(6) What prediction can be made of future changes in general traffic and what is the influence of these on the economics of the present situation?
- "(7) How should passenger traffic over the highway be evaluated?

"The Road:

- "(1) What type of road paving should be selected for a specified transport unit?
- "(2) If the road cannot be economically fitted to the truck transport unit, can the latter be modified in design to fit the road?
- "(3) How should the design of the road and paving be modified to meet changing conditions of subgrade, climate, etc.? How shall subsoils be improved?
- "(4) What sum of money is the locating engineer justified in spending to avoid increase in distance, curvature, rise and fall, maximum grade, maximum curve?
- "(5) What system of maintenance and organization is best fitted for types of roads, differing in traffic, in materials, and in climate?
- "(6) What is the capacity of a road of given width for type of vehicle as expressed in vehicles per hour, ton-miles per year, etc.? What is the appropriate unit for expressing traffic for various purposes?
- "(7) (In construction many questions arise in selection, production, and economical use of materials, standardization, and regulation).
- "(8) How may the volumetric changes in the roads be overcome?
- "(9) What is the economical life of various types of roads, that is, when maintenance charges exceed earning value?

"Administration:

- "(1) What should be the policy in control of truck and bus transportation systems, terminals, routing, etc.?
- "(2) What police regulations should control use of roads?
- "(3) What is the best administrative and executive organization for administration and operation of roads?
- "(4) What principles should govern the selection of a system of roads in its various parts, as influenced by interstate, intra-state, county, local traffic, etc.?

"Financing:

- "(1) What should be the method of financing construction and maintenance of roads? What portions of cost from long-term bonds, and what from current funds? What form of bonds should be issued and how create a market for them?
- "(2) What should be the relation between life of bonds and economical life of road?
- "(3) To what extent do social betterment, military use, that is, social value, and other imponderables enter into highway policy?
- "(4) What should be the distribution of costs as between Federal, State, county, township, property benefited, the user, and other units?

- "(5) How shall the future maintenance charges on completed road systems be met? Shall the user pay all of these?
"(6) How shall safety be ensured on the roads?"

After presenting these questions, Director Hatt stated that research in Highway Transport is necessary as well as "a mobilization of the efforts of research agencies in a comprehensive programme." In connection with this statement, he explained that the Advisory Board on Highway Research Committee of the Division of Engineering of National Research Council, had undertaken the co-ordination of such research, after which he indicated a means of developing the field of such research by the following studies:

- "(1) To develop a traffic census blank. Here, a traffic classification must be made, the purpose of the census determined, and the various forms and instructions standardized.
"(2) In order to determine the cost of transport, a statistical table must be made that notes all the elements of cost; sometimes only a few of these are reported.
"(3) To study the operating costs of elements entering into location of highways, such as distance, grade, curvature.
"(4) To study loads on roads as produced by the vehicle.
"(5) To study design of vehicles with a view to lessening their effects on the road.
"(6) To study supporting power and improvement of subgrades and the relations to design of paving.
"(7) To study resistance of concrete slabs to alternate stresses and to surface loads.
"(8) To study proportioning and use of bituminous materials.
"(9) To study bonding of brick surfaces.
"(10) To study volume changes and the means of meeting them.
"(11) To study operations of concrete mixers.
"(12) To study the organization and economics of construction plans.
"(13) To study sand-clay, top-soil and gravel roads.
"(14) To study cellular and other new types of paving."

In conclusion, Director Hatt stated:

"There is apparently a widespread activity in highway research throughout the United States on the part of the Bureau of Roads, the U. S. Army, the State Highway Commissions, the universities, and of industrial organizations, and an earnest desire to put highway construction on a scientific basis.

"The economical features are under critical examination by organizations such as the National Chamber of Commerce.

"We should be able to express quantitatively the results of a standardized economic survey of a road project, just as in the case of a water-power project, for instance, except for those imponderables which, like social betterment and public policy, influence the conclusions so profoundly.

"It is not too much to say that the situation is critical, and that the sooner those interested come to a basis of fact, the more assurance we will have that the public will not interrupt progress in providing for Highway Transport because of a general feeling of insecurity."

ACTIVITIES OF LOCAL SECTIONS***Ninety-Seventh Regular Meeting of the San Francisco Section**

The Ninety-Seventh regular meeting of the San Francisco Section was held at the Engineers' Club on June 21st, 1921; President F. R. Muhs in the chair; N. A. Bowers, Secretary; and present, also, 79 members and guests.

Mr. N. D. Baker, Chairman of the Excursion Committee, stated that more field excursions were now in order and that he would welcome suggestions from members as to points that would be of interest to visit.

On motion by Mr. E. T. Thurston, Chairman of the Committee on Society Affairs, a resolution to the effect that the Section go on record as endorsing the Constitution as approved at the Houston Convention. This resolution was seconded and carried unanimously.

Messrs. C. E. Grunsky and E. J. Schneider addressed the meeting relative to the vote on the new Constitution of the Society which is to be canvassed in October. Mr. Grunsky also described very briefly the excursions and entertainments held at the Annual Convention in Houston.

The Secretary presented a letter from the Spokane Section which concluded with an appeal for a favorable vote on the new Constitution of the Society.

Mr. J. B. Leonard mentioned a concrete test road which was being constructed by the Columbia Steel Company, and described the means which are being used to test various road designs and reinforcing steels. A cordial invitation was extended to the membership to witness the construction and test of the road.

The Secretary commented briefly on the activities of the San Francisco Engineering Council, stating that the Council is very actively using its influence in a way helpful to the community. He also called attention to the annual programme of the New York Section, which included a study of the problems of the Metropolitan District of New York, and suggested that the present seems to be an opportune time for the officers of this Section to consider ways and means of making its influence useful.

Mr. E. C. Hutchinson presented the following resolution:

"Whereas, The Motor Car Dealers Association has taken measures looking toward the providing of improved transportation facilities across San Francisco Bay; and

"Whereas, This is a matter of widespread public interest, which is evidenced by approving resolutions of various public and civic bodies; and

"Whereas, This is a matter in which we, as Engineers, are particularly interested; now, therefore, be it

"Resolved, That the San Francisco Section, Am. Soc. C. E., heartily commends the Motor Car Dealers Association for its interest in, and its intelligent handling of, the preliminary details of the project; and be it further

"Resolved, That the San Francisco Section, Am. Soc. C. E., pledges its hearty co-operation in carrying to a completion any feasible project for better transportation facilities to and from San Francisco; and

"Further, That notice of the adoption of this resolution be communicated to the San Francisco Engineering Council for such further action as it may deem advisable."

* For list of Local Sections, Officers, Meetings, etc., see p. 758.

After this resolution had been discussed by Messrs. Hammatt, Snyder, Marx, and Derleth, on motion of Mr. Thurston, it was revised to pledge approval for "any feasible project for better transportation facilities", and in this form was unanimously adopted.

Stating his belief that the resolution did not go far enough, Mr. C. H. Snyder moved the adoption of the following resolution:

"Resolved, That the Chairman be empowered to appoint a committee of three to co-operate with the organizations furthering the improvement of communication across San Francisco Bay, and that the Secretary be instructed to write to the Motor Car Dealers Association, advising them of the appointment of such committee."

After a brief discussion, the resolution was seconded and carried unanimously. (The President subsequently appointed as this Committee, Messrs. Francis Betts Smith, Chairman, Luther Wagoner, and Franklin Riffle.)

The speaker of the evening, Mr. H. T. Cory, addressed the Section on "Irrigation Developments on the River Nile", describing his personal experiences during service on an International Commission of Engineers. In the course of his remarks, he reviewed some of the difficult internal problems of the Egyptian Government, and cited figures to show the great size of the irrigation project. He also described briefly the engineering and construction methods of the country.

RESIGNATION OF SECRETARY BOWERS AND APPOINTMENT OF NEW ACTING SECRETARY

At a meeting of the Board of Directors on July 7th, 1921, Mr. Nathan A. Bowers tendered his resignation as Secretary-Treasurer of the Section. Mr. Bowers had served the section as Secretary-Treasurer for about four years, but felt compelled to resign the position on account of increasing business responsibilities to which he would have to confine his future activities.

The Board of Directors appointed Mr. H. D. Dewell as Secretary-Treasurer *pro tem.*

Regular Meeting of Duluth Section

A regular meeting of the Duluth Section was held on June 20th, 1921; President John L. Pickles in the chair; W. G. Zimmermann, Secretary; and present, also, 18 members and 2 guests.

The President introduced the guests, Mr. S. S. Cannett, of the U. S. Geological Survey and Chairman of the Minnesota-Wisconsin Boundary Commission, and Mr. S. B. Shepard, Road Engineer, St. Louis County, Minnesota.

The following Committee appointments for the year 1921-22 were announced: Entertainment, Messrs. O. H. Dickerson, E. K. Coe, E. H. Marks, and E. W. Kelly; Papers and Records, Messrs. J. H. Darling, E. H. Coe, and J. A. Lawrie; Publicity, Messrs. W. E. Hawley, E. H. Dresser, and C. M. Greer; Auditing, Messrs. W. H. Woodbury and H. C. Ash; and Library, Messrs. F. Hutchinson, C. D. Christie, and J. I. Quinn.

Correspondence was read from Elbert M. Chandler, Acting Secretary of the Society, relative to the future publication of all papers and discussions

in *Proceedings*, commencing with the August number, and to the plans and discussions of the New York Section, together with a copy of the programme adopted by the New York Section for its work during the season 1920-21.

A short paper entitled "Reinforced Concrete Piling", describing the various systems and their use, by Mr. E. H. Dresser, was presented by Mr. J. R. Stack. The subject was discussed by Messrs. Dresser, Hawley, Pickles, and Lawrie, and, on motion, duly seconded, it was decided to continue this discussion at the next meeting.

MEETING OF JULY 18TH, 1921.

A regular meeting of the Duluth Section was held on July 18th, 1921; President John L. Pickles in the chair; W. G. Zimmermann, Secretary; and present, also, 15 members and 1 guest, Mr. H. L. Dresser, formerly Chief Engineer of the Duluth, Missabe and Northern Railway.

The minutes of the meeting of June 20th, 1921, were read and approved.

An informal address was delivered by Mr. W. B. Patton on the determination and marking of the boundary line between Minnesota and Wisconsin, which work was only recently completed. This line divides the waters of Duluth-Superior Harbor and the St. Louis River to the first rapids between the two States.

MEETING OF AUGUST 15TH, 1921.

A regular meeting of the Duluth Section was held on August 15th, 1921; President John L. Pickles in the chair; W. G. Zimmermann, Secretary; and present, also, 22 members and one guest.

The minutes of the meeting of July 18th, 1921, were read and approved.

A letter was read from Mr. Richard L. Humphrey, a Director of the Society and Chairman of the Committee on Licensing of Engineers, stating that this Committee had been appointed to report to the Board of Direction on the whole question of the Licensing of Professional Engineers, and asking for the views of the members of the Section on this question. A committee, consisting of Messrs. W. H. Woodbury, J. H. Darling and W. E. Hawley, was appointed to take up this matter in detail and write to Mr. Humphrey directly in regard to it.

A letter from the St. Louis Section in reference to the bill now before Congress, which, if adopted, will place Sanitary Engineers and the U. S. Public Health Officers on a par with Medical Officers in the service, was read, and, on motion, duly seconded, ordered to be filed.

The speaker of the evening, Mr. J. A. Lawrie, presented an entertaining paper on the subject of "Fishing in Northern Minnesota".

Regular Meeting of the Los Angeles Section

The regular meeting of the Los Angeles Section was called to order at the Union League Club on July 13th, 1921; President H. W. Dennis in the chair; F. G. Dessery, Secretary; and present, also, 22 members and 13 guests.

President Dennis presented the speaker of the evening Mr. Eugene E. Prussing, a member of the Chicago Bar, who addressed the Section on the subject of "George Washington as an Engineer and his Engineering Activities". In the course of his remarks, Mr. Prussing who had had access to rare

documents in the archives of the Congressional Library and elsewhere, presented some hitherto little known history of Washington's activities as an engineer.

The subject was discussed by Messrs. C. E. Tait and S. A. Jubb, and, on motion, duly seconded, Mr. Prussing was extended a vote of thanks for his most enjoyable contribution and entertainment.

President Dennis then introduced Mr. Robert M. Allan, a member of the City Council, who promised co-operation in his administration as Councilman with the engineers and the Section. In this connection, President Dennis called attention to a recent letter from the Board of Directors to Mayor George E. Cryer in which the Section pledged itself to co-operate in civic affairs.

Professor Franklin Thomas, Chairman of the Committee on Conservation, presented a report on the Marshall Plan, in which the Committee recommended the adoption of resolutions approving the action of the Legislature in making an appropriation for an investigation of a comprehensive development of the water resources of the State and offering the assistance and co-operation of the Section to the State Engineer in the investigation.

A motion to adopt the report was made by Mr. W. F. Post and seconded by Mr. W. H. Code. After discussion by Messrs. Burr, Dennis, Jubb, Code, LaRue, Anderson, Tait, Comber, Adams, and Morris, it was decided, on motion, duly seconded, that the Secretary be instructed to send copies of the report and resolution to the members of the Section with the notice of the August meeting, inviting them to take part in a full discussion of the subject before final action is taken.

Mr. E. T. Flaherty introduced Mr. Edward James Cattell, Statistician of the City of Philadelphia, who brought the greetings of the Philadelphia Engineers' Club to the Section, which greeting was returned by President Dennis.

Mr. S. A. Jubb, Chairman of the Committee on Building Laws and Regulations, presented a progress report, suggesting changes in the City Building Ordinance. After discussion of the subject by Messrs. Jubb, Flaherty, Reed, Anderson, and Dessery, on motion by Professor Thomas, it was seconded and carried that the Committee's final report, containing conclusions and reasons therefor, be sent to the membership prior to final discussion and adoption.

President Dennis announced the appointment of Mr. E. G. Sheibley as a member of the City Planning Commission to succeed Mr. A. L. Sonderegger who had resigned, and Mr. Post gave a brief résumé of the work and activities of the Commission.

Relative to the appointment of sanitary engineers on the Federal Public Health Board, Mr. George G. Anderson referred to the untiring efforts of Mr. Sheibley in behalf of this matter.

He also called attention to the necessity of a thorough study of the proposed revised Constitution of the Society, suggesting that the matter be discussed not later than the September meeting of the Section.

Mr. Anderson also referred to a recent visit to the flooded areas in and about Pueblo, Colo., and exhibited a number of airplane photographs taken in and about the City of Pueblo and along the Arkansas River.

EMPLOYMENT SERVICE OF THE FEDERATED AMERICAN ENGINEERING SOCIETIES

An Engineering Societies Service Bureau was established December 1st, 1918, as an activity of Engineering Council, managed by a board made up of the Secretaries of the four Founder Societies, funds for its maintenance being provided by these Societies. On January 1st, 1921, this Bureau was taken over by The Federated American Engineering Societies and is now known as the Employment Service of that organization. It is co-operating with engineering organizations in all parts of the country and is desirous of increasing such co-operation by working with local engineering associations and clubs. Members of the American Society of Civil Engineers who desire to register should apply for further information, registration forms, etc., to Walter V. Brown, Manager, Engineering Societies Building, 29 West 39th Street, New York City. In order to be included in the list published in *Proceedings*, copy must be received on or before the first Wednesday of each month. All communications should be addressed to Mr. Brown.

EMPLOYMENT BULLETIN

POSITIONS AVAILABLE

PARTNER FOR CIVIL ENGINEERING FIRM in New Hampshire. Work mostly surveying and drawing, but there is good field for small construction work. Investment necessary. X-886.

SALES ENGINEER for certain building material specialties, such as concrete inserts and other means for fastening shaft-hangers in industrial buildings; a timber joint connection plate, to be used in all kinds of scaffolding, trestles, and other timber constructions; also special plaster furrings, which at same time serve as damp-proofing. Should preferably be building engineer with several years of practical and selling experience. Application by letter. X-965.

ENGINEERS, more or less prominent, as representatives to sell their plans to

builders of garages. Already have representatives in Boston, Springfield, Washington, Cleveland, Detroit, Chicago, and Kansas City. X-1015.

ENGINEER who has had experience both in design and construction of masonry bridges. To qualify for this position it will be necessary to take a civil service examination which probably will be an oral one, and which it is expected will be held in the near future. Location New York City. X-1016.

ENGINEER who has had experience in general construction work. To qualify for this position it will be necessary to take a civil service examination which probably will be an oral one, and which it is expected will be held in the near future. Location New York City. X-1017.

U. S. CIVIL SERVICE EXAMINATIONS

APPLY TO U. S. CIVIL SERVICE COMMISSION, WASHINGTON, D. C.

HYDROGRAPHIC AND TOPOGRAPHIC DRAFTSMAN. Applications will be rated as received until further notice. To fill vacancies under U. S. Coast and Geodetic Survey for duty in Washington, D. C., and Field Station, Manila, Philippine Islands, at entrance salaries ranging from \$1 600 to \$2 000, with a bonus of \$20 a month if services are satisfactory. Candidates not required to report for examination at any place, but will be rated on the following subjects, the relative weights being given (ratings based on sworn statements in applications and corroborative evidence): (1) Education, training and experience, 60; (2) drawing and lettering, 40. Prerequisite: (a) two years of engineering course in college, university, or technical school of recognized standing; (b) graduation from a four years' high-school course or the completion of a

course of study equivalent to that required for such graduation; and the successful completion of three full years of formal study in an institution of college grade, including courses in mathematics and physics. Physical examination required, also unmounted photographs taken within two years.

JUNIOR ENGINEER AND DECK OFFICER, U. S. Coast and Geodetic Survey, examination October 19th and 20th, 1921; entrance salary \$2 000 per year, increased to \$2 240 after one month if service is satisfactory. Vacancies in various commissioned grades will be filled by promotion of eligibles from this examination after at least six months experience in the temporary grade of Junior Engineer and Deck Officer. Subjects and weights: (1) mathematics, including trigonometry, analytics, me-

chanics, and calculus, 15; (2) practical computations, 20; (3) modern languages, 10; (4) astronomy, especially determination of latitude, longitude, time, and azimuth, and use of field instruments, 20; (5) physics, including optics, magnetism, etc., 15. (6) surveying, plane and geodetic, 20. Time allowed, two days of six hours each: (1), (2), and (3) on the first day and (4), (5), and (6) on the second day. Slide rule allowed and logarithmic tables furnished. Prerequisite: Graduation from college, university, or technical school of recognized standing with degree of B. S. or C. E. Physical examination required, also photographs on day of examination.

COMPUTER, U. S. Coast and Geodetic Survey, examination November 2d and 3d,

1921; salaries ranging from \$1400 to \$2000 per year, with a bonus of \$20 a month for appointees whose services are satisfactory. Subjects and weights: (1) mathematics, including trigonometry, mechanics, analytics, and differential and integral calculus, 35; (2) astronomy, physics, and surveying, 25; (3) practical computations, 30; (4) foreign languages (French, Italian, Spanish, or German), 10. Subjects (1) and (2) will be given on the first day, and Subjects (3) and (4) on the second day; logarithmic tables will be furnished in connection with Subject (3). Prerequisite: Graduation with a degree from an educational institution of recognized standing, with major work in mathematics, mathematical physics, or engineering. Physical examination required, also photograph on day of examination.

MEN AVAILABLE

DESIGNER, Assoc. M. Am. Soc. C. E., technical graduate, age 38, married. Fifteen years' experience on large hydro-electric, water supply, sewerage, and industrial building developments. Refer to past employers. Location in or near New York City. CE-253.

ENGINEER, executive, practicing, consulting, wishes to become associated with Architect, Engineer, or Contractor having established practice. Fifteen years' broad experience, planning, designing, and construction of all kinds of buildings, and reinforced concrete bridges. Especially proficient in fire-resistive construction, safety to life, fire-prevention, reinforced concrete, and difficult construction problems. CE-254.

GRADUATE CIVIL ENGINEER and Construction Superintendent, Assoc. M. Am. Soc. C. E., age 33; degree 1908. Twelve years' experience, roads, bridges, surveys, sewers, water-works, and concrete industrial buildings, including design, inspection, and superintendence. Recently, Captain, Construction Division, U. S. A., two years in charge of war work. Available at once. Location immaterial. CE-255.

GRADUATE ENGINEER, Assoc. M. Am. Soc. C. E., age 39, married. Fifteen years' experience along construction lines, including design and erection of large concrete structures; also had experience in hydraulic engineering, dredging, streets, and pavements. Plant Engineer at large steel shipyard during war; now completing work as Construction Engineer on 1100-ft. concrete viaduct over railway yards. Prefers position having prospects of permanency. Location of secondary consideration. CE-256.

CIVIL ENGINEER, graduate. Twenty years' broad, practical engineering and contracting experience on water-works, sewers, highways, hydraulics, and general engineering, with utility holding companies, consulting engineers, engineers, and contractors; investigations, design, construction, appraisals. Excellent references from all with whom ever associated. Will consider any requisition; salary commensurate with requirements. Correspondence solicited for present or future needs. CE-257.

CIVIL ENGINEER, Assoc. M. Am. Soc. C. E., age 36. Eighteen years' experience on construction work. Extensive experience on river and harbor improvements, surveys for and supervision of hydraulic dredging; supervision of pile foundations and heavy concrete construction. Has had charge of office and field construction and surveys; over 10 years in responsible charge of work. Location preferably in New York City, Newark, N. J., or immediate vicinity. CE-258.

ENGINEER, Assoc. M. Am. Soc. C. E.; technical education in Civil Engineering; age 31; married. Eleven years' practical engineering and business experience with steam and electric railways, contractors, and manufacturers, on construction, design, and maintenance of machinery, buildings, track work, heavy excavation, plant maintenance, sales engineering, and general business administration. Desires a position of permanence, in executive capacity, with contractor, manufacturer, engineering firm, or steam or electric railway. Location immaterial as long as permanence and possibilities can be assured. CE-259.

ANNOUNCEMENTS

The Reading Room of the Society is open from 9 A. M. to 6 P. M., and from 7 P. M., to 10 P. M., every day, except Sundays, New Year's Day, Washington's Birthday, Memorial Day, Fourth of July, Labor Day, Thanksgiving Day, and Christmas Day; during July and August, it is closed at 6 P. M.

FUTURE MEETINGS

October 5th, 1921.—8.00 P. M.—A regular business meeting will be held, at which the ballot on the Proposed Revision of the Constitution will be canvassed.

A paper by James Munn and J. L. Savage, Members, Am. Soc. C. E., entitled "The Flood of June, 1921, in the Arkansas River, at Pueblo, Colorado", will be presented for discussion. A paper by C. E. Grunsky, M. Am. Soc. C. E., entitled "Rainfall and Run-Off Studies" will also be presented for discussion. Both these papers appear in full in the current issue of *Proceedings*. Special provision will be made for a general discussion on the broad aspects of Flood Control Problems. It is probable there will be two or more sessions at this meeting, concluding on October 6th, 1921.

SECOND MEETINGS OF THE MONTH

Under authority given by the Board of Direction at its meeting of August 9th, 1920, the Acting Secretary has made an arrangement with the New York Section whereby the latter will take over the second meeting of the month, and will thus hold its own meetings on the third Wednesday of each month, except January and May, when they are held on the second Wednesday.

The programmes of the New York Section are similar to those heretofore offered by the Society's Committee on Second Meeting of the Month, and it is understood that all members of the Society are invited to attend the meetings regardless of whether or not they may be members of the Section. This arrangement gives each member the same privilege of attendance at meetings which he has heretofore enjoyed, and is deemed especially desirable since there has been considerable doubt as to the attendance that might develop at the several meetings if three were held in each month.

COMMITTEE ON LICENSING OF PROFESSIONAL ENGINEERS

The Committee on Licensing of Professional Engineers finds it impractical to hold hearings in different parts of the country and realizes that it is equally impractical for many members to attend the Conferences in New York City.

The Committee, therefore, solicits the written opinions of those who are unable to attend the Conferences.

NEW INDEX TO "TRANSACTIONS"

The Committee on Publications has in course of preparation an Index to the *Transactions* of the Society, covering Volumes I to LXXXIII (1867-1920), inclusive. It is hoped to have this Index printed and copies of it forwarded to the membership within the next two months.

"TRANSACTIONS" FOR SALE

It is possible to secure a fairly complete set of the *Transactions* of the Society for a very reasonable price as, owing to limited storage space, the Board of Direction has decided to dispose as rapidly as possible of surplus stock.

Some volumes are entirely out of print. Of those available, the following can now be furnished to *members of the Society* for the prices noted:

Vols. 2, 6, 9-10, 15-20, 22, 24-27, 29-42, 44. (30 Vols.) \$50
" 45, 49-53, Parts A-F of 54, 55-67, 69-70, 72-79. (35 ") \$50

It is suggested that members wishing these volumes send in their orders promptly, as the supply of certain of them is limited. Requests will be filled in order of receipt.

A deduction of \$2 per volume will be made for any volume out of print when the order is received.

FINAL REPORT OF CONFERENCE COMMITTEE

In accordance with the action of the Board of Direction at its meeting held April 26th, 1921, 1 000 copies of the Final Report of the Conference Committee, appointed by the Committee on Development, and representing the Society on the Joint Conference Committee consisting of similar Committees appointed by the American Institute of Mining and Metallurgical Engineers, the American Society of Mechanical Engineers, and the American Institute of Electrical Engineers, have been printed and are available for distribution. The charge for this report is 35 cents per copy.

Copies may be obtained by addressing Elbert M. Chandler, Acting Secretary, Am. Soc. C. E., 33 West 39th St., New York City.

SEARCHES IN THE LIBRARY

As the Library of the American Society of Civil Engineers has been merged in the Engineering Societies Library, requests for searches, copies, translations, etc., should be addressed to the Director, Engineering Societies Library, 29 West 39th Street, New York City, who will gladly give information concerning the charges for the various kinds of service. A more comprehensive statement in regard to this matter will be found on page 21 of the Year Book for 1921.

PAPERS AND DISCUSSIONS

Members and others who take part in the oral discussions of the papers presented are urged to revise their remarks promptly. Written communications from those who cannot attend the meetings should be sent in at the earliest possible date after the issue of a paper. Written discussion on a given paper will be closed three months after the paper has been published, so that the author's closure can be printed four months after the paper.

All manuscripts submitted for publication should preferably be typewritten, and always double spaced. Drawings and diagrams should be on separate sheets, drawn to a scale suitable for about one-half to one-fourth reduction.

All papers accepted by the Publication Committee are classified by the Committee with respect to their availability for discussion at meetings.

Papers which, from their general nature, appear to be of a character suitable for oral discussion will be set down for presentation to a future meeting of the Society, and, on these, oral discussions, as well as written communications, will be solicited.

All papers which do not come under this heading, that is to say, those which from their mathematical or technical nature, in the opinion of the Committee, are not adapted to oral discussion, will not be scheduled for presentation to any meeting. Such papers will be published in the same manner as those which are to be presented at meetings, but written discussions only will be requested for subsequent publication and with the paper in the volumes of *Transactions*.

The Board of Direction has adopted rules for the preparation and presentation of papers, which will be found on page 36 of the Year Book for 1921.

LOCAL SECTIONS OF THE AMERICAN SOCIETY OF CIVIL ENGINEERS

San Francisco Section (Constitution Approved by Board, 1905).

Frederick R. Muhs, President; H. D. Dewell, Secretary-Treasurer, *pro tem.*, 58 Sutter Street, San Francisco, Cal.

Bi-monthly meetings are held at 6 p. m., at the Engineers' Club, 57 Post Street, on the third Tuesday of February, April, June, August, October, and December, the last being the Annual Meeting. Informal luncheons are held at noon, every Wednesday, at the Engineers' Club. All members of the Society will be gladly welcomed.

Colorado Section (Constitution Approved by Board, 1909).

A. N. Miller, President; Walter L. Drager, Secretary-Treasurer, 412 Tramway Building, Denver, Colo.

Meetings are held on the second Monday of each month, except July and August, usually preceded by an informal dinner. Weekly luncheons are held on Wednesday, at 12.30 p. m., at Daniels and Fisher's. Visiting members of the Society are urged to attend.

Atlanta Section (Constitution Approved by Board, 1912).

J. T. Wardlaw, President; R. S. Fiske, Secretary-Treasurer, 1530 Healey Building, Atlanta, Ga.

Informal luncheons are held on the second Tuesday of each month, at 1.00 p. m., at the Ansley Hotel, to which visiting members of the Society are welcome. Visitors desiring information will telephone the Secretary, "Ivy 3605."

Baltimore Section (Constitution Approved by Board, 1914).

Ezra B. Whitman, President; George S. Robertson, Sr., Secretary-Treasurer, 1628 Linden Avenue, Baltimore, Md.

Buffalo Section (Constitution Approved by Board, 1921).

A. L. Johnson, President; Bruce L. Cushing, Secretary-Treasurer, 80 West Genesee Street, Buffalo, N. Y.

Central Ohio Section (Constitution Approved by Board, 1921).

F. H. Eno, President; H. D. Bruning, Secretary, 935 Madison Avenue, Columbus, Ohio.

Meetings are held at the rooms of the Engineers' Club of Columbus in the Southern Hotel. The Annual Meeting is held on the second Friday of

November and at least two other meetings are held each year the dates of which are designated by the Board of Direction of the Section.

Cincinnati Section (Constitution Approved by Board, 1920).

Edgar Dow Gilman, President; Alphonse M. Westenhoff, Secretary, 13 East Third Street, Cincinnati, Ohio.

Cleveland Section (Constitution Approved by Board, 1915).

J. E. A. Moore, President; George H. Tinker, Secretary-Treasurer, 516 Columbia Building, Cleveland, Ohio.

Regular meetings are held on the second Wednesday of each month, at 12.15 p. m., in the rooms of the Section, Hotel Winton. Luncheon is served, and all visiting members of the Society are invited to attend.

Connecticut Section (Constitution Approved by Board, 1919).

Charles Rufus Harte, President; Clarence M. Blair, Secretary-Treasurer, 785 Edgewood Avenue, New Haven, Conn.

The Annual Meeting is held in April; fortnightly meetings alternate between Hartford and New Haven, Conn. These meetings are informal luncheon gatherings, held usually at noon on Saturday. Members are privileged to invite guests regardless of their affiliation as engineers.

Detroit Section (Constitution Approved by Board, 1916).

David A. Molitor, President; Dalton R. Wells, Secretary-Treasurer, 624 McKerchey Building, Detroit, Mich.

Regular meetings are held on the second Friday of December, April, and October, the last being the Annual Meeting.

District of Columbia Section (Constitution Approved by Board, 1916).

John C. Hoyt, President; James H. Van Wagenen, Secretary-Treasurer, 2001 Sixteenth Street, N. W., Washington, D. C.

Duluth Section (Constitution Approved by Board, 1917).

John L. Pickles, President; Walter G. Zimmermann, Secretary, 203 Wolvin Building, Duluth, Minn.

Regular meetings are held at noon on the third Monday of each month, usually at the Kitchi Gammi Club, to which visiting members of the Society will be welcomed. The Annual Meeting is held on the third Monday in May.

Illinois Section (Constitution Approved by Board, 1916).

Charles B. Burdick, President; W. D. Gerber, Secretary-Treasurer, 918 Chamber of Commerce, Chicago, Ill.

Regular meetings are held on the second Monday of March, June, September, and December, the last being the Annual Meeting.

Iowa Section (Constitution Approved by Board, 1920).

C. S. Nichols, President; R. W. Crum, Secretary, Care, Iowa State Highway Commission, Ames, Iowa.

Los Angeles Section (Constitution Approved by Board, 1913).

H. W. Dennis, President; Floyd G. Dessery, Secretary, 619 Central Building, Los Angeles, Cal.

Regular monthly meetings are held on the second Wednesday of each month, the Annual Meeting in December. Informal luncheons in connection with the Joint Technical Societies of Los Angeles are held at 12.15 p. m., every Thursday at the Broadway Department Store Café.

Louisiana Section (Constitution Approved by Board, 1914).

Ole K. Olsen, President; F. A. Muth, Secretary, 224 Custom House Building, New Orleans, La.

Regular meetings are held at The Cabildo, New Orleans, La., on the first Monday of January, April, July, and October.

Nashville Section (Constitution Approved by Board, 1921).

Arthur J. Dyer, President; Granbery Jackson, Secretary-Treasurer, 220 Capitol Boulevard, Nashville, Tenn.

Nebraska Section (Constitution Approved by Board, 1917).

Rodman M. Brown, President; Homer V. Knouse, Secretary-Treasurer, 200 City Hall, Omaha, Nebr.

Regular meetings are held on the first Saturday of each month, except July and August. The Annual Meeting is held in Lincoln, Nebr., on the second Friday in January. Visiting members of the Society are especially urged to communicate with the Secretary when in the city.

New York Section (Constitution Approved by Board, 1920).

Nelson P. Lewis, President; J. P. J. Williams, Secretary, 33 West 39th Street, New York City.

Regular meetings are held in the Engineering Societies Building, 29 West 39th Street, New York City, on the third Wednesday of each month, except January and the Annual Meeting in May, held on the second Wednesday of the month.

Northwestern Section (Constitution Approved by Board, 1914).

Charles L. Pillsbury, President; Paul C. Gauger, Secretary, 945 Osceola Ave., St. Paul, Minn.

Meetings are held bi-monthly, alternating between St. Paul and Minneapolis, on the third Friday of each month.

Oklahoma Section (Constitution Approved by Board, 1920).

H. V. Hinckley, President; R. E. Brownell, Secretary-Treasurer, 401 First National Bank Building, Oklahoma, Okla.

Philadelphia Section (Constitution Approved by Board, 1913).

John Meigs, President; S. C. Hollister, Secretary, 1200 Land Title Building, Philadelphia, Pa.

Regular meetings are held at the Engineers' Club on the first Monday in January, April, and October, the last being the Annual Meeting. Special meetings are also held at times announced in advance.

Pittsburgh Section (Constitution Approved by Board, 1918).

N. S. Sprague, President; Nathan Schein, Secretary-Treasurer, 1510 Carson Street, Pittsburgh, Pa.

Portland (Ore.) Section (Constitution Approved by Board, 1913).

M. E. Reed, President; C. P. Keyser, Secretary, 318 City Hall, Portland, Ore.

Meetings are held regularly on the third Friday of each month. All members of the Society in any grade are cordially invited to attend.

Providence (R. I.) Section (Constitution Approved by Board, 1920).

Sydney Wilmot, Chairman; Robert L. Bowen, Secretary-Treasurer, 26 Sycamore Street, Providence, R. I.

The Section regularly holds meetings jointly with the Structural and Municipal Sections of the Providence Engineering Society, at the Society

Rooms, 29 Waterman Street, on the fourth Tuesday of each month, from September to May. The Annual Meeting is held in May. All visiting members of the Society are cordially invited to attend these meetings.

St. Louis Section (Constitution Approved by Board, 1914).

William S. Mitchell, President; W. R. Crecelius, Secretary-Treasurer, 301 City Hall, St. Louis, Mo.

The Annual Meeting is held on the fourth Monday in November. Two meetings each year for the presentation and discussion of technical papers are held in the Auditorium of the Engineers' Club, and are open to members of the Associated Societies. Other "get-together" meetings are held regularly for dinner or luncheon on the fourth Monday of each month except July, August, and November.

San Diego Section (Constitution Approved by Board, 1915).

F. J. Grumm, President; J. Y. Jewett, Secretary-Treasurer, Administration Building, Balboa Park, San Diego, Cal.

The San Diego Section of the American Society of Civil Engineers meets on announcement. Pilgrimages to points of engineering interest are made at intervals throughout the year.

Seattle Section (Constitution Approved by Board, 1913).

T. E. Phipps, President; Frank H. Fowler, Secretary-Treasurer, 1319 L. C. Smith Building, Seattle, Wash.

Regular meetings, with luncheon, are held at the Engineers' Club, on the last Monday of each month. All members in any grade of the Society are cordially invited to attend, and if located in this District for any length of time, their membership in the Section will be appreciated.

Spokane Section (Constitution Approved by Board, 1914).

E. G. Taber, President; Charles E. Davis, Secretary-Treasurer, 401 City Hall, Spokane, Wash.

Meetings are held on the second Friday of each month. These meetings are noonday luncheons at Davenport's, and all visiting members of the Society are invited to attend.

Texas Section (Constitution Approved by Board, 1913).

J. H. Brillhart, President; E. N. Noyes, Secretary, 1107 Dallas County Bank Building, Dallas, Tex.

Utah Section (Constitution Approved by Board, 1916).

W. R. Armstrong, President, H. S. Kleinschmidt, Secretary-Treasurer, 222 Felt Building, Salt Lake City, Utah.

The Annual Meeting is held on the first Wednesday in April. The time of other meetings is not fixed, but this information will be furnished on application to the Secretary.

**STUDENT CHAPTERS OF THE
AMERICAN SOCIETY OF CIVIL ENGINEERS***

Leland Stanford, Jr., University Student Chapter, Organized 1920.

R. L. Wing, President; John H. Colton, Corresponding Secretary, Box 121, Stanford, Cal.

Alabama Polytechnic Institute Student Chapter, Organized 1921.

Alfred D. Boyd, Secretary, Alabama Polytechnic Institute, Auburn, Ala.

* By a recent ruling of the Board of Direction, the minimum membership of a Student Chapter has been fixed at 12 instead of 20.

Braune Civil Engineering Society (University of Cincinnati) Student Chapter, Organized 1920.

Clinton H. Wood, President; H. J. Miller, Secretary of Section I; Alvord C. Stutson, Secretary of Section II; University of Cincinnati, Cincinnati, Ohio.

California Institute of Technology Student Chapter, Organized 1921.

J. Arthur Macdonald, Secretary, California Institute of Technology, Pasadena, Cal.

Civil Engineering Society of Rensselaer Polytechnic Institute Student Chapter, Organized 1920.

E. C. Larson, President; T. W. Broughton, Secretary, 2165 Fourteenth Street, Troy, N. Y.

Cornell University Student Chapter, Organized 1921.

John J. Chavanne, Jr., Secretary, Cornell University, Ithaca, N. Y.

Drexel Institute Student Chapter, Organized 1920.

Miles N. Clair, Chairman; Raymond Radbill, Secretary, Drexel Institute, Philadelphia, Pa.

Iowa State College Student Chapter, Organized 1920.

Alfred W. Warren, Secretary, Iowa State College, Ames, Iowa.

Johns Hopkins University Student Chapter, Organized 1921.

Eric M. Arndt, President; Melvin E. Scheidt, Secretary, Box 566, Homewood, Baltimore, Md.

Massachusetts Institute of Technology Student Chapter, Organized 1921.

D. H. McCreery, President; T. S. Wray, Secretary, Massachusetts Institute of Technology, Cambridge, Mass.

New York University Student Chapter, Organized 1921.

William J. Kiehnlé, President; George H. Martin, Jr., Secretary, New York University, University Heights, New York City.

Oregon State Agricultural College Student Chapter, Organized 1921.

John B. Alexander, Secretary, Omega Upsilon House, Oregon State Agricultural College, Corvallis, Ore.

Pennsylvania State College Student Chapter, Organized 1920.

Arthur H. McFadden, President; William W. Seltzer, Secretary, Pennsylvania State College, State College, Pa.

Polytechnic Institute of Brooklyn Student Chapter, Organized 1921.

Richard Kanegsberg, Secretary, Polytechnic Institute of Brooklyn, Brooklyn, N. Y.

Purdue University Student Chapter, Organized 1921.

Donald A. Leach, President, 208 Fowler Avenue, West Lafayette, Ind.

Rose Polytechnic Institute Student Chapter, Organized 1921.

Kenneth L. De Blois, President; Duncan Baker, Secretary, 1606 North 8th Street, Terre Haute, Ind.

Rutgers College Student Chapter, Organized 1921.

Arthur E. Hilliard, Secretary, Winants Hall, Rutgers College, New Brunswick, N. J.

State University of Iowa Student Chapter, Organized 1921.

C. E. Stickney, Secretary, State University of Iowa, Iowa City, Iowa.

Swarthmore College Student Chapter, Organized 1921.

Edward E. Bartleson, Secretary, Swarthmore College, Swarthmore, Pa.

Syracuse University Student Chapter, Organized 1921.

Arthur V. Dollard, Secretary, College of Applied Science, Syracuse University, Syracuse, N. Y.

University of California Student Chapter, Organized 1921.

H. G. Gerdes, Secretary, Care, Prof. Charles Derleth, Jr., College of Civil Engineering, University of California, Berkeley, Cal.

University of Colorado Civil Engineering Society Student Chapter, Organized 1920.

W. C. Peterson, President; D. H. McNeal, Secretary, 1205 Thirteenth Street, Boulder, Colo.

University of Illinois Student Chapter, Organized 1921.

A. L. R. Sanders, President; M. E. Jansson, Secretary, University of Illinois, Urbana, Ill.

University of Kansas Student Chapter, Organized 1921.

B. C. Judkins, President; Seth P. Kingman, Secretary, 1125 Kentucky Street, Lawrence, Kans.

University of Kentucky Student Chapter, Organized 1921.

B. O. Bartee, Secretary, University of Kentucky, Lexington, Ky.

University of Maine Student Chapter, Organized 1921.

George H. Ferguson, Jr., Secretary, University of Maine, Orono, Me.

University of Pennsylvania Student Chapter, Organized 1920.

Charles W. Foppert, President; Fred Welch, Secretary, University of Pennsylvania, Philadelphia, Pa.

University of Pittsburgh Student Chapter, Organized 1921.

W. E. Marshall, President; Paul H. Young, Secretary, University of Pittsburgh, Pittsburgh, Pa.

University of Texas Student Chapter, Organized 1921.

W. H. D. Taylor, President; Phil M. Ferguson, Secretary, 511 West 19th Street, Austin, Tex.

University of Washington Student Chapter, Organized 1921.

G. B. Richardson, President; Grace Eugenie Morrill, Secretary, University of Washington, Seattle, Wash.

University of Wisconsin Student Chapter, Organized 1921.

Herbert Wheaton, President; Olaf N. Rove, Secretary, University of Wisconsin, Madison, Wis.

Virginia Military Institute Student Chapter, Organized 1921.

Benjamin F. Parrott, Secretary, Virginia Military Institute, Lexington, Va.

Washington University Collimation Club Student Chapter, Organized 1920.

William D. Rolfe, President; Erwin Bloss, Secretary, Washington University, St. Louis, Mo.

Yale University Student Chapter, Organized 1921.

W. G. Geile, President; P. W. Thompson, Secretary, Winchester Hall, New Haven, Conn.

**PRIVILEGES OF ENGINEERING SOCIETIES
EXTENDED TO MEMBERS OF THE
AMERICAN SOCIETY OF CIVIL ENGINEERS**

Members of the American Society of Civil Engineers will be welcome in the Reading Rooms and at the meetings of many engineering societies in all parts of the world. A list of such societies will be found on pages 48, 49, and 50 of the Year Book of the Society for 1921.

NEW BOOKS*

(From August 1st to August 31st, 1921)

The statements made in these notices are taken from the books themselves, and this Society is not responsible for them.

DONATIONS TO ENGINEERING SOCIETIES LIBRARY**TESTING OF CONTINUOUS CURRENT MACHINES.**

By Charles F. Smith. (Pitman's Technical Primers.) Lond. and N. Y., Sir Isaac Pitman & Sons, Ltd., 1921. 102 pp., illus., 6 x 4 in., boards. \$1.00.

This book attempts to give in compact form an outline of the main principles underlying the practice of testing electrical machines for commercial purposes. Simplicity and emphasis on the main purposes of the tests have been the chief aims, so that much detail and many tests of limited application have been excluded. The book is intended for young engineers.

POWER FACTOR CORRECTION.

By A. E. Clayton. (Pitman's Technical Primers.) Lond. and N. Y., Sir Isaac Pitman & Sons, Ltd., 1921. 108 pp., illus., 6 x 4 in., boards. \$1.00.

This little book presents the fundamental principles of power-factor correction in an easily digestible form, without attempting a complete treatment of the subject. It discusses the use of static and rotary condensers and of phase advancers for improving the power factor, concentrating attention on the principles governing their action, without attempting to describe every proposed device.

WIRING FOR LIGHT AND POWER.

By Terrell Croft. Third Edition. N. Y. and Lond., McGraw-Hill Book Co., Inc., 1921. 465 pp., illus., 7 x 5 in., cloth. \$3.00.

This book is designed to fill the need for a wiring handbook that meets the requirements of the National Electrical Code, and at the same time describes and illustrates the best American practice in wiring. This edition includes a supplement covering the changes introduced in the 1920 issue of the National Electrical Code.

ELECTRICITY IN STEEL WORKS.

By William McFarlane. (Pitman's Technical Primers.) Lond. and N. Y., Sir Isaac Pitman & Sons, Ltd., 1921. 109 pp., illus., 6 x 4 in., boards. \$1.00.

This review of electrical practice in iron and steel works is intended for students of the steel industry and electrical engineers interested in the special conditions and requirements in steel mills. It attempts to deal with fundamental principles and practice in the generation of electricity for use in steel works, in the use of electric motors for driving rolling mills, and in the use of electro-magnets and electric lighting.

ELECTRICAL RATES.

By G. P. Watkins. N. Y., D. Van Nostrand Co., 1921. 228 pp., diagrams, 9 x 6 in., cloth. \$3.00.

This book on rate-making, the outgrowth of nine years' experience in the statistical bureau of a public service commission, is written from the viewpoint of an economist. The author has endeavored to offer a more extensive explanation and constructive application of economic principles than is customary in works on this subject and to go further into fundamental economic problems. Much space is given to the differential rate theory, to load factors, and to density factors.

DESIGN AND CONSTRUCTION OF POWER WORKBOATS.

By Arthur F. Johnson. Cleveland, Penton Pub. Co., 1920. 113 pp., diagrams, tab., 12 x 9 in., cloth. \$5.00.

The vessels considered in this volume are those propelled by internal combustion engines and intended for traversing coastwise, harbor, or inland waters, embracing ferryboats for freight and passenger service, tugs, lighters, tank boats, trawlers, shop, pumping, and wrecking boats. The information is given in detail and illustrated with working drawings.

HEATING SYSTEMS.

By F. W. Raynes. Second Edition. Lond. and N. Y., Longmans, Green and Co., 1921. 324 pp., plates, diagrams, tab., 9 x 6 in., cloth. \$7.50.

This textbook on the design of heating systems presents modern English practice. A special feature is the large number of charts that have been prepared and the method

* Unless otherwise specified, books in this list have been donated by the publishers.

adopted for calculating pipe sizes. The practical rather than the theoretical aspects of the work have been given attention. Consideration is also given to the economical aspect of heating problems, especially in the heating of industrial buildings and plants. The new edition has been brought up to date.

BROACHING PRACTICE.

By E. K. Hammond. N. Y., The Industrial Press; Lond., the Machinery Pub. Co., Ltd., 1921. 122 pp., illus., 9 x 6 in., paper. \$1.00.

For many years broaching has been used for cutting keyways and machining holes to a variety of shapes, but the method attracted little attention until comparatively recently. With the rise of the automobile industry, broaching machines came into common use and are now extensively applied in building many products. This book is a concise review of modern practice, explaining the machines, the design of broaches, and the application of the process to many classes of work.

THE ORIFICE METER AND GAS MEASUREMENT.

By Willis C. Brown and Malcolm B. Hall. Foxboro, Mass., The Foxboro Co., Inc., 1921. 112 pp., tab., illus., 8 x 5 in., cloth. \$3.50.

This book, published by the manufacturers of the first commercial orifice meter, gives authentic information on orifice coefficients and their derivation, together with complete details of the mechanical construction of their own meter.

THE MECHANICAL PRODUCTION OF COLD.

By Sir J. A. Ewing. Second Edition. Cambridge, University Press, 1921. 204 pp., diagrams, 9 x 6 in., cloth. \$8.00. (Gift of The Macmillan Co., N. Y.)

This book contains the "Howard" Lectures delivered before the Society of Arts in 1897, as revised and reprinted in 1908. It provides a general account of refrigeration, in which stress is laid on the thermodynamic aspect of the subject, and an attempt is made to render this aspect intelligible without unnecessary mathematics. The changes in this edition are the correction of certain errata and the clearing up of some obscure points.

LONGWALL COAL-CUTTING MACHINERY.

By G. F. F. Eagar. (Pitman's Technical Primers.) Lond. and N. Y., Sir Isaac Pitman & Sons, Ltd., 1921. 109 pp., illus., 6 x 4 in., boards. \$1.00.

This primer is a concise review of the whole subject, with especial reference to practical aspects, and is intended to assist in the correct application of coal-cutting machinery and the selection of the proper type of machine for given conditions.

HEAT TREATMENT OF SOFT AND MEDIUM STEELS.

By Federico Giolitti. Translated by E. E. Thum and D. G. Vernaci. N. Y. and Lond., McGraw-Hill Book Co., Inc., 1921. 374 pp., illus., 9 x 6 in., cloth. \$5.00.

Metallurgists and metallographists, according to the translator of this volume, have only recently been impressed by the fact that various impurities and addition agents may affect the properties of finished steel far in excess of that expected by their apparent amount. Precise data along the lines are almost entirely lacking; therefore, this book, containing the first systematic discussion of their effect on commercial heat treatment, should prove a stimulus toward their study, as it shows the great advantages to be gained by their elimination or suppression. Contents: The Phenomena of Diffusion in Primary Solid Solution; Effects of Diffusion upon Secondary Crystallization; Diffusion in Austenite as Applied to the Preliminary Heat Treatment of Steels; Preliminary Heat Treatment of Steel Castings; Preliminary Heat Treatment of Forged and Rolled Steels.

THE A. B. C. OF IRON AND STEEL.

Edited by A. O. Backert. Cleveland, Penton Pub. Co., 1921. 408 pp., illus., 11 x 8 in., cloth. \$5.00.

This is a simple, concise yet comprehensive account of the primary processes involved in the conversion of iron ore into finished products. It is intended for general readers who wish a knowledge of these processes, and for technical readers wishing general information on phases of the industry outside their own experience. The book is elaborately illustrated.

MANHOOD OF HUMANITY.

By Alfred Korzybski. N. Y., E. P. Dutton & Co., 1921. 264 pp., 8 x 6 in., cloth. \$3.00.

This book is primarily a study of man and ultimately embraces all the great qualities and problems of man. The author approaches the problem from a mathematical, an engineering, point of view, with the object of ascertaining what man's real nature is and what the basic laws of his nature are, and hopes thus to point the way to a science of directing human energies and capacities to the advancement of human welfare.

CHEMICAL TECHNOLOGY AND ANALYSIS OF OILS, FATS, AND WAXES.

By Dr. J. Lewkowitsch. Edited by George H. Warburton. Sixth Edition, Rewritten and Enlarged. Lond., Macmillan & Co., Ltd., 1921. 1 v., illus., tab., cloth. \$12.00. (Gift of The Macmillan Co., N. Y.)

The first volume of the new edition is devoted to the classification of these substances, to their physical and chemical properties, their constituents, and to methods for their chemical examination. As the progress which has been made on the subject of oils and waxes since the previous edition has been chiefly on the technological side, this volume has not been greatly expanded; it has, however, been entirely rewritten. This edition, like the previous issues of this standard work, is characterized by its wide scope, exhaustive detail, and accuracy.

TEXTBOOK OF INORGANIC CHEMISTRY FOR COLLEGES.

By Dr. James F. Norris. (International Chemical Series.) N. Y. and Lond., McGraw-Hill Book Co., Inc., 1921. 677 pp., 45 illus., 5½ x 8 in., cloth. \$3.50.

This textbook presents the material commonly treated in elementary books on chemistry. The author has tried to present this in a form that can be followed by the student through private study, with the smallest amount of explanation by the teacher. To accomplish this, the subject is developed slowly and consideration of the more abstruse material is deferred until the student has gained some familiarity with chemical phenomena and the language of the science.

ROADWAY AND TRACK.

By W. F. Rench. N. Y., Simmons-Boardman Publishing Co., 1921. 242 pp., illus., 9 x 6 in., cloth. \$3.00.

The scope of this work is well indicated by its contents. The practice described is, in large measure, that of the Pennsylvania Railroad, but methods not used by that road, which are standard on other roads are described in a number of places. The volume is not intended to set forth all the methods used to meet the problems that arise, nor to present theories, but is a concise description of methods that have given satisfaction in practice. Contents: The Essential Elements in Roadway Maintenance; The Right of Way; Drainage of Roadbed and Tracks; Vegetation for Banks; Labor-Saving Devices and Methods in Roadway Work; Economics of Roadway; Tools and Their Uses; The Essential Elements in Maintenance of Track; A Programme for M. W. and S. Work; The Track Obstruction; Labor-Saving Devices and Methods in Track Work; Track Materials and Their Use; Practice in Rail Renewals; Maintenance of Main Tracks; Maintenance of Yards and Terminals; Maintenance Problems and Methods Used; Economics of Track Labor; Special Duties in the M. W. Department.

HANDBOOK OF CONSTRUCTION EQUIPMENT.

By Richard T. Dana. N. Y. and Lond., McGraw-Hill Book Co., Inc., 1921. 849 pp., illus., tab., 7 x 4 in., cloth. \$6.00.

This book is primarily a handbook for contractors. It attempts to supply, in systematic form, up-to-date information on what is available as construction equipment, what it costs, and how it should be used. This information is arranged alphabetically and accompanied by numerous illustrations and tables. The book is offered in lieu of a new edition of the "Handbook of Construction Plant". Some of the material in the old book has been omitted and much new material added.

CONCRETE DESIGNERS' MANUAL; TABLES AND DIAGRAMS FOR THE DESIGN

Of Reinforced Concrete Structures. By G. A. Hool and C. S. Whitney. N. Y. and Lond., McGraw-Hill Book Co., Inc., 1921. 276 pp., cloth. \$4.00.

These tables and diagrams facilitate the rapid design of structures in accordance with the recommendations of the Joint Committee and the American Concrete Institute, and the requirements of the New York Building Code and the Chicago Building Code. Some of them are general enough also to be used when the requirements are different from those mentioned. The collection is the result of the authors' practical experience.

DONATIONS TO THE READING ROOM.**ECONOMICS OF BRIDGEWORK;**

A Sequel to Bridge Engineering. By J. A. L. Waddell. N. Y., John Wiley & Sons, Inc.; Lond., Chapman & Hall, Ltd., 1921. 512 pp., diagrams, pl., 9¼ x 6 in., cloth. \$6.00. (Gift of the Author.)

In this volume, the author states that he has desired to leave behind him for the benefit of the next generation of bridge specialists, in shape readily available for use, a solution of all the major economic problems in bridge work and an extensive treatment of most of the minor ones. He gives in his preface a list of the problems on which he has worked, in the order of their final solution. These investigations are separately incorporated in chapters of the book.

MEMBERSHIP

(From August 3d to September 6th, 1921)

ADDITIONS

MEMBERS

Date of
Membership.

ARMSTRONG, EDWARD ROBERT. Care, DuPont Co., Eng. Dept., Wilmington, Del.....		April 25, 1921
BATTYE, BASIL CONDON, Lt. Col., R. E., Care, Messrs. Cox & Co. (R. E. Branch), 16 Charing Cross, London, S. W., England..		April 25, 1921
BENNETT, MANCHE OWEN. Res. Engr., and Secy., Judith Basin Irrig. Dist., Danvers, Mont....	Assoc. M. M.	Mar. 13, 1917 July 11, 1921
COANE, HENRY EDWARD. Civ., Hydr. and Min. Engr. (J. M. & H. E. Coane), 70 Queen St., Mel- bourne, Victoria, Australia.....	Assoc. M. M.	Aug. 31, 1915 April 26, 1921
EPPS, FREDERICK WILLIAM. Bridge Engr., State High- way Comm., Topeka, Kans.....	Assoc. M. M.	May 7, 1913 April 26, 1921
GREENE, JOSEPH JOHN. Superv. Engr., Public Works Dept., Sydney, New South Wales, Australia...	Assoc. M. M.	April 7, 1915 June 6, 1921
KNOWLTON, WILLIS TAYLOR. Engr. of Sewers, City of Los Angeles, 502 Hosfield Bldg., Los Angeles, Cal.....		July 11, 1921
LANGFITT, WILLIAM CAMPBELL. Gen. Mgr. for David Belais, 137 West 14th St., New York City.....		June 6, 1921
LUCE, ROBERT FRANCIS. Hydrographic and Geodetic Engr., U. S. Coast and Geodetic Survey, Launch <i>Mikawe</i> , Box 524, Charleston, S. C.....		June 6, 1921
MILLER, EDWARD THOMAS EVERY. Asst. to Chf. Engr., Ferro Carril Central Argentino, Oficina del Ingeniero en Jefe, B Mitre 299, Buenos Aires, Argentine Republic.....	Assoc. M. M.	Dec. 5, 1911 Oct. 11, 1920
OKUMURA, KANJI. Civ. Engr., Inawashiro Hydro-Elec. Power Co., Marunouchi, Tokyo, Japan.....		July 11, 1921
PERKINS, FRANK WILLIAM. Engr. and Archt., 381 River St., Manistee, Mich.....		July 11, 1921
QUIMBY, JOHN HERMAN. Office Engr., Guggenheim Bros., Pearl River, N. Y.....	Assoc. M. M.	April 5, 1910 June 6, 1921
SEERY, FRANCIS JOSEPH. Prof. of Civ. Eng., Cornell Univ., 504 University Ave., Ithaca, N. Y.....	Assoc. M. M.	April 3, 1907 June 6, 1921
SHEIDLER, PAUL KING. Engr., Gen. Tarvia Dept., The Barrett Co., Illuminating Bldg., Cleveland, Ohio.....		Mar. 7, 1921

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BROWN, THOMAS PHELPS. With McClintic-Marshall Co., Wyland Ave., Allison Park, Pa.....		Mar. 7, 1921
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CARMICHAEL, JAMES TROY. Box 702, Bozeman, Mont.....		June 6, 1921

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ENGER, NORVAL. Constr. Engr., Grant County, Ephrata, Wash....	April 25, 1921
HALKYARD, CHARLES CYRIL. Head Works Engr. and Hydr. Engr., Hydro-Elec. Dept. of Tasmania, View St. Sandy Bay, Tasmania	Mar. 7, 1921
HEFT, JOHN GEORGE. Asst. County Engr., Sonoma County, Hermosa Beach, Cal.....	Mar. 7, 1921
JOHNSON, JOHN EDWARD. Res. Engr., Westcott Eng. Co., Box 932, Orange, Tex.....	July 11, 1921
LIVINGSTON, RAY CLIFFORD. Res. Engr., Lyndale Project, Hennepin County, 602 Essex St., S. E., Minneapolis, Minn.....	Mar. 7, 1921
LOFGREN, WILLARD EMANUEL. Asst. Gen. Mgr., The Thomas & Armstrong Co., London, Ohio.....	June 6, 1921
MCCURDY, BYRON CASPER. Res. Engr. with Morgan } Jun. June 16, 1919	
Eng. Co., 622 Goodwyn Inst., Memphis, Tenn.... { Assoc. M. Mar. 7, 1921	
NEWELL, JOHN ROWE. Secy., Treas., and Mgr., Spokane Concrete Pipe Co., Box 1033, Spokane, Wash.....	July 11, 1921
REED, ROBERT WILSON. Asst. Div. Supt., Great Lakes Dredge & Dock Co., 1100 D. S. Morgan Bldg., Buffalo, N. Y.....	April 25, 1921
RICE, FREDERICK WILLIAM PETER. Structural Engr., 1127 South 32d St., Omaha, Nebr.....	July 11, 1921
ROSENGARTEN, WALTER EDWARD. Traffic Engr., The Asphalt Assoc., 714 West 181st St., Apartment 2, New York City.....	July 11, 1921
ROSSI, CAMILLE CHARLES. Gen. Supt., Peruvian Copper & Smelting Co., Hotel Maury, Lima, Peru.....	July 11, 1921
ROWE, JOHN AUGUSTINE. 52 Ellis Pl., Ossining, N. Y.....	April 25, 1921
SAYERS, FLOYD WILLIAM. Res. Engr., Missouri State Highway Dept., 805 East Cypress St., Charleston, Mo.....	July 11, 1921
SEDELMAYER, HERMAN ANTON. Chf. Draftsman, U. S. Forest Service, Ferry Bldg., San Francisco, Cal.....	June 6, 1921
SIMONSEN, ROBERTO COCHRANE. Director, Companhia Frigorifica y Pastoral de São Paulo, Caixa 222, Santos, Brazil.....	June 6, 1921
SKILLMAN, GEORGE ELDRIDGE, JR. Asst. Engr., N. Y. C. R. R., 466 Lexington Ave., Room 728 (Res., 335 East 205th St.), New York City.....	April 25, 1921
SMITH, CLYDE C. Chf. Engr., Unit Constr. Co., 1225 Title Guaranty Bldg., St. Louis, Mo.....	July 11, 1921
WAITE, JAMES EARL. Res. Engr., A., T. & S. F. Ry., Box 488, Kingman, Ariz.....	Mar. 7, 1921
WHEAT, THOMAS MOSS. 1800 Ferry Park Ave., Detroit, Mich....	Mar. 7, 1921
WHELAN, JAMES MARION, JR. (Whelan & Saigh), 202 Gibbs Bldg., San Antonio, Tex.....	Mar. 7, 1921
WING, SUMNER PADDOCK. Care, C. F. Elwell, Ltd., 12 Craven House, Kingsway, London, England.....	June 6, 1921

JUNIORS

CANAVAN, PATRICK FRANCIS. Asst. Supt., Concrete Constr., Turner Constr. Co., 100 Morningside Drive, New York City..	Mar. 7, 1921
LOOK, FREDERICK WARREN. 240 Fair St., Kingston, N. Y.....	April 25, 1921

JUNIORS (Continued)

	Date of Membership.
SENIOR, JACK. Hydrographic and Geodetic Engr., U. S. Coast and Geodetic Survey, 202 Burke Bldg., Seattle, Wash.....	July 11, 1921
THINES, JOHN WILKING. With Louis J. Sieling, 119 Perry St., Trenton, N. J.....	July 11, 1921
WATERS, ERNEST GILBERT. Asst. Engr., Shell Oil Co. of California, Box 916, Martinez, Cal.....	June 6, 1921

DEATHS

- LARKIN, CHARLES RAYMOND. Elected Junior, January 14th, 1918; Associate Member, June 1st, 1920; died August 30th, 1921.
- NICHOLS, WILLARD ATHERTON. Elected Member, May 7th, 1873; died August 23d, 1921.

Total Membership of the Society, September 6th, 1921,

10 146.

MONTHLY LIST OF RECENT ENGINEERING ARTICLES OF INTEREST

(August 1st to September 1st, 1921)

NOTE.—This list is published for the purpose of placing before the members of this Society the titles of current engineering articles, which can be referred to in any available engineering library, or can be procured by addressing the publication directly, the address and price being given wherever possible.

LIST OF PUBLICATIONS

In the subjoined list of articles, references are given by the number prefixed to each journal in this list.

- (2) *Journal*, Engrs. Club of Phila., Philadelphia, Pa.
- (3) *Journal*, Franklin Inst., Philadelphia, Pa., 50c.
- (4) *Journal*, Western Soc. of Engrs., Chicago, Ill., 50c.
- (5) *Journal*, Eng. Inst. of Canada, Montreal, Que., Canada.
- (6) *Journal*, Am. Inst. of Archts., Washington, D. C., 50c.
- (7) *Gesundheits Ingenieur*, Munich, Germany.
- (8) *Stevens Indicator*, Hoboken, N. J., 50c.
- (9) *Industrial Management*, New York City, 25c.
- (11) *Engineering* (London), W. H. Wiley, 432 Fourth Ave., New York City, 25c.
- (12) *The Engineer* (London), International News Co., New York City, 35c.
- (13) *Engineering News-Record*, New York City, 25c.
- (15) *Railway Age*, New York City, 15c.
- (16) *Engineering and Mining Journal*, New York City, 15c.
- (17) *Electric Railway Journal*, New York City, 10c.
- (18) *Railway Review*, Chicago, Ill., 15c.
- (19) *Scientific American Monthly*, New York City, 10c.
- (20) *Iron Age*, New York City, 20c.
- (21) *Railway Engineer*, London, England, 1s. 2d.
- (22) *Iron and Coal Trades Review*, London, England, 6d.
- (24) *American Gas Journal*, New York City, 10c.
- (25) *Railway Mechanical Engineer*, New York City, 20c.
- (26) *Electrical Review*, London, England, 4d.
- (27) *Electrical World*, New York City, 10c.
- (28) *Journal*, New England Water-Works Assoc., Boston, Mass., \$1.
- (29) *Journal*, Royal Soc. of Arts, London, England, 6d.
- (30) *Annales des Travaux Publics de Belgique*, Brussels, Belgium.
- (31) *Annales de l'Assoc. des Ingenieurs Sortis des Ecoles Speciales de Gand*, Brussels, Belgium.
- (32) *Memoires et Compte Rendu des Travaux*, Soc. Ing. Civ. de France, Paris, France.
- (33) *Le Génie Civil*, Paris, France, 1 fr.
- (36) *Cornell Civil Engineer*, Ithaca, N. Y.
- (40) *Zentralblatt der Bauverwaltung*, Berlin, Germany, 60 pfg.
- (41) *Elektrotechnische Zeitschrift*, Berlin, Germany.
- (42) *Journal*, Am. Inst. Elec. Engrs., New York City, \$1.
- (43) *Annales des Ponts et Chaussées*, Paris, France.
- (45) *Coal Age*, New York City, 15c.
- (46) *Scientific American*, New York City, 15c.
- (47) *Mechanical Engineer*, Manchester, England, 3d.
- (48) *Zeitschrift*, Verein Deutscher Ingenieure, Berlin, Germany.
- (49) *Zeitschrift für Bauwesen*, Berlin, Germany.
- (50) *Stahl und Eisen*, Düsseldorf, Germany.
- (53) *Zeitschrift*, Oesterreichischer Ingenieur und Architekten-Verein, Vienna, Austria, 70h.
- (54) *Transactions*, Am. Soc. C. E., New York City, \$16.
- (55) *Mechanical Engineering: Journal*, Am. Soc. M. E., New York City, 35c.
- (56) *Transactions*, Am. Inst. Min. and Metallurgical Engrs., New York City, \$6.
- (57) *Colliery Guardian*, London, England, 5d.
- (58) *Proceedings*, Engrs.' Soc. of W. Pa., 2511 Oliver Bldg., Pittsburgh, Pa., 50c.
- (59) *Proceedings*, American Water Works Assoc., Troy, N. Y.
- (60) *Municipal and County Engineering*, Indianapolis, Ind., 25c.
- (61) *Proceedings*, Western Railway Club, 225 Dearborn St., Chicago, Ill., 25c.
- (62) *Forging and Heat Treating*, Thaw Bldg., Pittsburgh, Pa., 10c.
- (63) *Minutes of Proceedings*, Inst. C. E., London, England.
- (64) *Power*, New York City, 10c.
- (65) *Official Proceedings*, New York Railroad Club, Brooklyn, N. Y., 15c.
- (67) *Cement and Engineering News*, Chicago, Ill., 25c.
- (69) *Eisenbau*, Leipzig, Germany.
- (71) *Journal*, Iron and Steel Inst., London, England.
- (71a) *Carnegie Scholarship Memoirs*, Iron and Steel Inst., London, England.
- (72) *American Machinist*, New York City, 15c.
- (73) *Electrician*, London, England, 1s.
- (75) *Proceedings*, Inst. of Mech. Engrs., London, England.
- (77) *Journal*, Inst. Elec. Engrs., London, England, 5s.
- (78) *Beton und Eisen*, Vienna, Austria.
- (80) *Industrie Zeitung*, Berlin, Germany.
- (83) *Gas Age*, New York City, 15c.
- (85) *Proceedings*, Am. Ry. Eng. Assoc., Chicago, Ill.
- (86) *Engineering and Contracting*, Chicago, Ill., 10c.
- (87) *Railway Maintenance Engineer*, Chicago, Ill., 10c.
- (88) *Bulletin of the International Ry. Congress Assoc.*, Brussels, Belgium.
- (89) *Proceedings*, Am. Soc. for Testing Materials, Philadelphia, Pa., \$5.
- (90) *Transactions*, Inst. of Naval Archts., London, England.
- (91) *Transactions*, Soc. of Naval Archts. and Marine Engrs., New York City.
- (92) *Bulletin*, Soc. d'Encouragement pour l'Industrie Nationale, Paris, France.
- (96) *Canadian Engineer*, Toronto, Ont., Canada, 10c.
- (98) *Journal*, Engrs. Soc. of Pa., Harrisburg, Pa., 30c.

- (99) *Proceedings*, Am. Soc. of Municipal Improvements, New York City, \$2.
 (100) *Military Engineer: Journal of the Society of American Military Engineers*, Washington, D. C., 75c.
 (103) *Mining and Scientific Press*, San Francisco, Cal., 10c.
 (105) *Chemical and Metallurgical Engineering*, New York City, 25c.
 (106) *Transactions*, Inst. of Min. Engrs., London, England, 6s.
 (107) *Schweizerische Bauzeitung*, Zürich, Switzerland.
 (109) *Journal*, Boston Soc. C. E., Boston, Mass., 50c.
 (111) *Journal of Electricity and Western Industry*, San Francisco, Cal., 25c.
 (113) *Proceedings*, Am. Wood Preservers' Assoc., Baltimore, Md.
 (114) *Journal*, Institution of Municipal and County Engineers, London, England, 1s. 6d.
 (115) *Journal*, Engrs. Club of St. Louis, St. Louis, Mo., 35c.
 (116) *Blast Furnace and Steel Plant*, Pittsburgh, Pa., 15c.
 (117) *Engineering World*, Chicago, Ill.
 (118) *Times Engineering Supplement*, London, England, 2d.
 (119) *Landscape Architecture*, Harrisburg, Pa., 50c.
 (120) *Automotive Industries*, New York City, 15c.
 (121) *Proceedings*, Am. Concrete Inst., Boston, Mass.
 (122) *The Dock and Harbour Authority*, London, England, 1s. 6d.

LIST OF ARTICLES

Bridges.

- The Construction of Public Buildings and Bridges in St. Louis. L. R. Bowen. (99) Vol. 27, The Delaware River Bridge.* (2) July.
 Columbia River Suspension Bridge.* (117) Aug.
 Sinking Substructure of Bascule Bridge Reconstruction.* (13) Aug. 4.
 A Study of Stresses in Eyebars Heads.* Josef Beke. (13) Aug. 11.
 Features of San Francisco Bay Bridge Report. (13) Aug. 13.
 Le Projet de Pont Suspendu de 987 Mètres de Portée sur l'Hudson, à New-York.* (The Proposed Suspension Bridge over the Hudson at New York, with a Span of 987 Meters.) (33) June 25.
 Le Pont de Villeneuve-sur-Lot (Lot-et-Garonne) Perfectionnements dans la Construction des Grandes Voûtes.* (The Villeneuve-sur-Lot Bridge (Lot-et-Garonne) Improvements in the Construction of the Large Arches.) E. Freyssinet. (33) Serial beginning July 30.

Electrical.

- Magnetos for Ignition Purposes in Internal Combustion Engines.* E. A. Watson. (77) May.
 Harmonic Analysis by Selected Ordinates.* Albert E. Clayton. (77) May.
 Electric Driving in the Paper Mill, on Heat-Economy Lines.* A. B. Mallinson. (77) May.
 Zig-Zag Leakage.* Laurence H. A. Carr. (73) July 15.
 Power Supply in Dundee.* (73) July 15.
 Dimensions and Output.* Lawrence E. Wichmark. (42) Aug.
 Voltage Regulation and Insulation for Large Power, Long Distance Transmission Systems.* Frank G. Baum. (42) Aug.
 On the Equivalence of the Two Theories of the Single Phase Induction Motor.* V. Karapetoff. (42) Aug.
 Notes on the Audion and Its Application.* H. B. Sherman and S. R. Parker. (5) Aug.
 Wiring Systems for Lighting of Hotels and Clubs.* Clyde P. Trueax. (117) Aug.
 The Super-Conductivity in Metals. C. A. Crommelin. (From *Die Naturwissenschaften*.) (19) Aug.
 Motor-Control Equipment—Protective Features.* H. D. James. (64) Aug. 2.
 Some Developments in Multi-Speed Cascade Induction Motors.* F. Creedy. (77) Aug. 3.
 Submarine Cable Tests. J. Rymer-Jones. (26) Aug. 5.
 A New Instrument for Measuring Frequency and Other Quantities.* R. C. Clinker. (73) Aug. 5.
 Overspeed Device for Electric Winders.* (22) Aug. 5.
 Note on the Low-Frequency Voltage Factor of an Oscillating Triode. Mary Taylor. (73) Aug. 12.
 Leader Cables in Navigation.* J. J. Bennett. (73) Aug. 12.
 Cutting Coal Consumption a Third.* (17) Aug. 13.
 Automatic Substation Justifies Its Use for Low Load Densities.* C. M. Gilt. (27) Aug. 13.
 Graphic Meter Records—a Necessity.* E. G. Ralston. (27) Aug. 13.
 Effects of Voltage Fluctuations on Direct-Current Motors.* H. M. Phillips. (64) Aug. 16.
 Cutouts for Motor Protection.* Edgar P. Slack. (64) Aug. 16.
 The Thermionic Tube—a Return to Simplicity.* L. C. Pocock. (73) Aug. 19.
 A Quiescent Aerial Wireless Telephone.* John Scott-Taggart. (73) Aug. 19.
 Correct Illumination for Yards and Scalehouses.* J. H. Kurlander. (15) Aug. 20.
 Downtown Substation in San Francisco.* J. E. Woodbridge. (17) Aug. 20.
 Combating Fires in Transformers and Oil Switches.* C. T. Sinclair. (27) Aug. 20.
 Simplified Layout of Rotary-Converter Substation.* J. E. Woodbridge. (27) Aug. 20.
 Variation in Costs as Affecting Distribution Design. P. O. Reyneau and H. P. Seelye. (27) Aug. 20.
 Voltage Characteristics of Direct-Current Generators and Their Bearing on Parallel Operation.* Eustis H. Thompson. (64) Aug. 23.
 Power Plant Designed to Meet Conditions in Coal-Mining District.* W. P. Gavit. (64) Aug. 23.
 Three-Wire Railway Distribution in Wilmington.* A. P. Way. (17) Aug. 27.
 Unstable Operation of Generating Stations in Parallel.* D. D. Higgins. (27) Aug. 27.
 Quick Line Calculations Without Charts or Tables.* Austin Burt. (27) Aug. 27.
 Standard Oil Mine Plant at Schoper.* (64) Aug. 30.

* Illustrated.

Electrical—(Continued).

- Compound Generators and Their Adjustment for Multiple Operation.* Eustis H. Thompson. (64) Aug. 30.
 Generator Operating Temperatures.* S. H. Mortensen. (64) Aug. 30.
 Tests on Full-Size High Voltage Transmission Towers.* Eugen F. Kriegsman. (13) Sept. 1.
 La Station Radiotélégraphique Lafayette à Croix-d'Hins, près Bordeaux. Fondations en béton armé des pylônes de l'antenne.* (Lafayette Radiotelegraph Station at Croix-d'Hins near Bordeaux. Reinforced Concrete Foundations for the Antennae Towers.) Harel de la Noë. (33) July 9.

Marine.

- Internal Combustion Engines in Marine Service. Charles Edward Lucke. (3) Serial beginning July.
 Electric Propulsion of Ships.* W. E. Thau. (42) Aug.
 Leader Cables in Navigation.* J. J. Bennett. (73) Aug. 12.
 Le Paquebot *Paris* de la Compagnie Générale Transatlantique.* (Mail Steamship *Paris* of the Compagnie Générale Transatlantique.) Ch. Dantin. (33) July 23.

Mechanical.

- Asphalt Production, Refining and Related Problems.* Herbert Spencer. (99) Vol. 27, 1920.
 Some Experience in the Development of the Oil Engine.* F. B. Leopold. (59) July.
 Developments in Power Station Design. (12) Serial beginning July 15.
 The Carbonisation of Sarre Coals.* (57) July 15.
 Sulphate of Ammonia Plant at Leamington Gas Works.* (11) July 22.
 The Reavell Quadruplex Air Compressor and Some Tests Thereon. (12) July 22.
 The "Becander" Haulage Gear. (11) July 22.
 Effect on Fuel Economy of Refinement in Engine Design.* L. Mantell. (120) July 28.
 Economical Working of Boiler Plant.* (From Fuel Economy Monograph No. 1.) (22) July 29.
 A Chart for the Design of Helical Wire Springs.* R. Brooks. (11) July 29.
 The Smith Continuous Carbonization Process.* (11) July 29.
 Gas Flow Measurement.* Noah D. Lambert. (24) July 30.
 Developing 600-Mile Auto Trunk Line Carrier.* (117) Aug.
 Steam Superheaters. Arthur D. Pratt. (2) Aug.
 Production of Gas. (Means for Augmenting Capacity.) (118) Aug.
 Electrical Terminal Facilities. (Unloading Ships.)* C. S. McDowell. (42) Aug.
 The Chilling of Condensate.* C. Harold Berry. (64) Aug. 2.
 Recoiling the Lubricating Oil from Turbine Bearings and Reduction Gears.* S. E. Derby. (64) Aug. 2.
 Electric Elevator Machinery—Car Safeties.* M. A. Myers. (64) Aug. 2.
 The Use of Oil in Cleaning Coal.* G. St. J. Perrott and S. P. Kinney. (105) Aug. 3.
 Magnets for Ignition Purposes in Internal Combustion Engines.* E. A. Watson. (77) Aug. 3.
 The Layout of a Modern Machine-Tool Plant.* Fred H. Colvin. (72) Aug. 4.
 Design and Operation of Locomotive Fuel Oil Stations.* (13) Aug. 4.
 Concrete Hauled Three Miles from Central Mixing Plant.* (13) Aug. 4.
 The Specification and Testing of Castings.* Walter Rosenhain. (120) Aug. 4.
 New Coke-Oven and By-Product Plant at the Acklam Works of the North-Eastern Steel Company, Limited.* (22) Aug. 5.
 Vegetable Oils for Internal Combustion Engines. (12) Aug. 5.
 The Aerodynamic Experimental Station at Göttingen.* (11) Aug. 5.
 Ash-Handling Plant at Poplar Electric Power Station.* (11) Aug. 5.
 Interlocking Belt Conveyor System.* A. M. Beebe. (83) Aug. 6.
 Dirt Plus Static as Cause of Turbo-Generator Fires.* D. D. Higgins. (64) Aug. 9.
 Electric Motors for Driving Refrigeration Plants—Their Types, Characteristics and Selection.* W. H. Motz. (64) Aug. 9.
 The Electrical Method of Detecting Surface Condenser Leakage.* W. E. Caldwell. (64) Aug. 9.
 Non-Condensing Turbine Operation on Heating Load.* R. D. DeWolf. (64) Aug. 9.
 Evaporation by Vapor Compression.* Burton Duglinson. (105) Aug. 10.
 Grease in Boiler Feed Water. Edward Ingham. (57) Aug. 12.
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1. The first part of the report deals with the general situation of the country and the progress of the work during the year. It is a summary of the work done by the various departments and a statement of the results achieved. It is a general statement of the work done by the various departments and a statement of the results achieved.

2. The second part of the report deals with the work done by the various departments. It is a detailed statement of the work done by the various departments and a statement of the results achieved. It is a detailed statement of the work done by the various departments and a statement of the results achieved.

3. The third part of the report deals with the work done by the various departments. It is a detailed statement of the work done by the various departments and a statement of the results achieved. It is a detailed statement of the work done by the various departments and a statement of the results achieved.

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9. The ninth part of the report deals with the work done by the various departments. It is a detailed statement of the work done by the various departments and a statement of the results achieved. It is a detailed statement of the work done by the various departments and a statement of the results achieved.

10. The tenth part of the report deals with the work done by the various departments. It is a detailed statement of the work done by the various departments and a statement of the results achieved. It is a detailed statement of the work done by the various departments and a statement of the results achieved.

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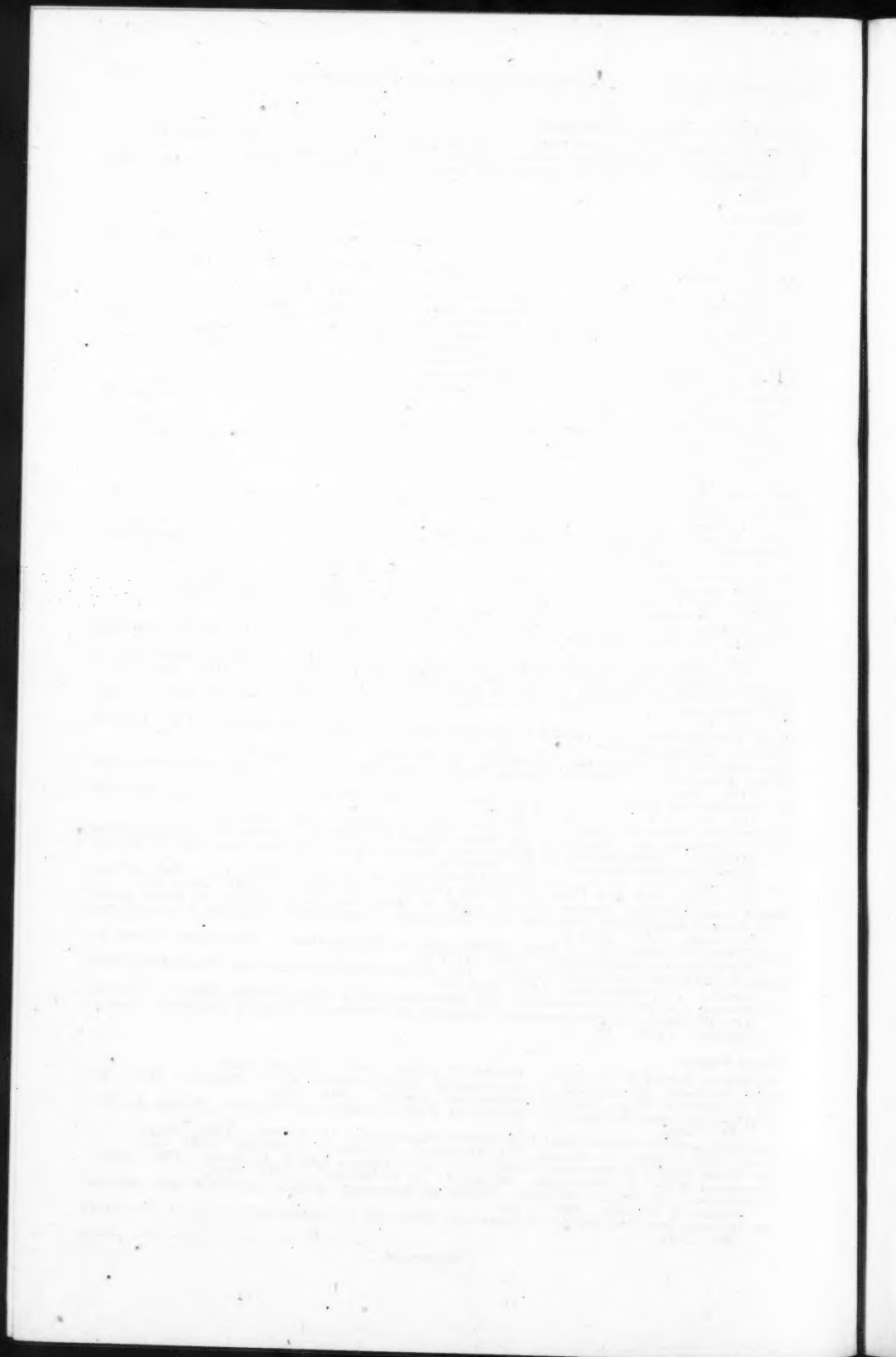
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- Birkenhead's Alwen Water Supply.* (12) Aug. 19; (11) Aug. 19.
- Water Treatment—Intermittent or Continuous.* W. R. Toppan. (15) Aug. 20.
- Stresses in Horizontal Pipes on Rigid Saddles.* Theodore B. Parker. (13) Aug. 25.
- Precast Blocks Used Alternately with Concrete in Dam Coping.* David C. Finston. (13) Sept. 1.
- Projet d'utilisation des Marées dans la Baie de Rothéneuf (Ille-et-Vilaine).* (Project for the Utilization of Tides in Bay of Rothéneuf (Ille-et-Vilaine).) Ch. Dantin. (33) July 30.

Waterways.

- Systems of Concrete Piles.* (117) Aug.
- The St. Lawrence Waterway. Charles Whiting Baker. (117) Aug.
- Electrical Quay Cranes.* Claude W. Hill. (122) Serial beginning Aug.
- Terminal Railways and Drayways.* H. McL. Harding. (18) Aug. 6.
- Methods of Constructing Flexible Concrete Revetment on Miami River, Ohio.* (86) Aug. 17.
- Flood Protection Channel Project for Dallas, Tex. (13) Aug. 25.
- Freight-Handling Devices at the Port of Seattle.* Gilbert Gordon. (18) Aug. 27.
- Precast Concrete Breakwaters Used in Lake Erie. (13) Sept. 1.
- Note Sur les Ouvrages d'Accostage en Ciment Arme du Port de Nantes et de la Loire Maritime.* (Reinforced Concrete Docks in the Nantes Port and Loire Harbor.) M. Kauffmann. (43) Mar.-Apr.

* Illustrated.